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ART. I.—*Biographical Notice of the Rev.* Timothy Dwight, *S. T. D. L. L. D. late President and Professor of Divinity of Yale College.*

FEW men, in our country, have, for the last thirty-five years, filled a larger space in the view of the literary and religious public, than the late president Dwight of Yale college, in Connecticut. To gratify the natural and very reasonable curiosity, in his countrymen, to know something of the history of a man, who was so highly distinguished for his talents and his services, the following outlines of his life have been sketched. What is here given, it is believed, is authentic; though it is hoped and expected, that some one, who has more ample means of information, and who was more intimately acquainted with the subject of this article, will prepare a more extended account; such an one as is every way suited to the character of the late President, and is demanded by his numerous friends and admirers.

Timothy Dwight, S. T. D. L.L. D., late President and Professor of Divinity of Yale College, was born at Northampton, in the state of Massachusetts, May, 1752. The family, from which he was descended, is, we understand, one of the oldest in that commonwealth. His father, Timothy Dwight, was a gentleman of liberal education, of great respectability of character, and particularly distinguished for the scrupulous integrity with which he discharged every relative duty. His mother was a daughter of the Rev. Jonathan Edwards, President of the College at Princeton, New Jersey,—so extensively known as a metaphysician and divine. Their oldest child, Timothy, the subject of this sketch, was early noticed as a boy of uncommon sprightliness, and of great quickness of apprehension. His acquisition of the elements of learning was so rapid, that, before the age of four, he could read, as an exercise, a chapter in the Bible, with ease and propriety. He was early put under the instruction of the Rev. Enoch Huntington, of Middletown,

Connecticut,--a gentleman of great classical attainments; and, at the age of thirteen years, was admitted into the freshman class of Yale college. At his examination for admission, it is understood, he acquitted himself in a manner highly honourable to himself and to his instructor; and, by an uncommon exhibition of youthful ingenuousness, and intelligence in every subject upon which he was questioned, inspired the college faculty with a strong interest in his welfare; and gave them, as they thought, ample ground to presage his future eminence as a scholar.

The situation of the college was, at this time, very unfavourable for forming or preserving studious habits. President Clap, who was then at the head of the seminary, had lost a considerable portion of the vigour of his early life;—from the concurrence of numerous unfavourable circumstances, the collegiate government was enfeebled; and, as might have been expected, the morals of the students were, in many instances, corrupt, and diligence in study was extremely rare. It will be seen, at once, that a youth of thirteen must, in such a place, be exposed to numerous temptations; and that his early principles of sobriety and virtue must be put to the strongest trial. Young Dwight, however, escaped the danger unhurt. In addition to the best native disposition, strengthened and fortified by the ablest parental instruction and advice, he had the good fortune to have for his particular tutor a man able to discern his worth, and willing to make every exertion to aid him in his academical progress. His tutor is still living,—the venerable Stephen Mix Mitchell, Esqr. late Chief Justice of the state of Connecticut; a gentleman to whom, with his associates in the government, the college is deeply indebted for the most strenuous and successful efforts to correct the relaxed discipline at that difficult period. He has lived to see the fruit of his former labours in the literary eminence of his pupil, and to lament, with innumerable others, that so much worth and such capacity for benefiting mankind should be so early removed from the world. The writer of this article, has more than once heard judge Mitchell describe with great interest, the readiness, and even alacrity with which young Dwight, in forming his collegiate connexions, as well as habits of study, complied with his advice,--and the independence which he manifested, even at this tender age, in resisting the enticements of the idle and profligate, and pursuing undeviatingly the path of industry and virtue.

He took the degree of bachelor of arts in 1769, at the age of seventeen. As might be expected, from the character he had maintained as an undergraduate he left college with a high re-

putation, not only as a young man of brilliant talents, but of the most solid and valuable acquirements. From his commencing bachelor of arts, till he was elected a tutor of the college, he spent his time, partly with his friends at Northampton,—partly as an instructor in the classical school in Newhaven,—and partly in college pursuing his studies as a resident graduate. What was the course of his studies, during this interval, and what success attended them, appears from an oration exhibited by him at the commencement of 1772, when he was admitted to a master's degree. This scholastic exercise was received with unprecedented applause; and, as the performance of a youth of twenty, was universally considered as evidence of uncommon research, great correctness of taste and maturity of judgment. By the advice of his friends, this oration was soon published, entitled 'a Dissertation on the History, Eloquence, and Poetry of the Bible.' This was his first publication; and is on a subject, which he ever afterwards delighted to contemplate. It strongly exhibits some of the peculiar features of his mind, and shows the course of study which he very early adopted.

At the commencement of 1771, he was elected a tutor of the college,—the duties of which station he discharged, for six years, with great fidelity and success. On the death of president Clap, Dr. Daggett, who filled the divinity chair, had been appointed president *pro tempore;* and continued, till about the close of Mr. Dwight's tutorship, to fill both offices. Dr. Daggett, though a man of great worth, and extensive learning, in his profession, was ill qualified to direct the multifarious concerns of a college. With much knowledge of books, he had little knowledge of the world; and he peculiarly failed in managing young men,—who, from the strength of their feelings, and from their want of experience in the consequences of actions, often make large demands on the patience and wisdom of college government. He had good sense enough, however, to discern his own deficiencies, and that Mr. Dwight had talents peculiarly fitted for the very place in which he himself most failed. The consequence was, that Mr. Dwight, though most of the time he filled the office of a tutor in college, had a much larger share in the government of the students than usually falls to those in the same station;—and it is not improbable, that his early initiation into the difficulties of college discipline, had its full influence, in rendering him in after life, so eminent in this arduous but necessary part of a collegiate system. But it was not in government alone, that Mr. Dwight distinguished himself during his tutorship. The taste of the students, at this time, in elocution, and in English composition was at an

extremely low ebb; or rather little or nothing had been done to cultivate and improve it. President Clap was a great proficient in mathematics, natural philosophy, metaphysics and ethics; and the standard of excellence which his example and influence had contributed to fix, continued to about this time, in a great measure, unshaken. The first, however it is believed, who ventured to make a direct attack on the old collegiate system, was the Rev. Joseph Howe; who entered upon the duties of a tutor in college, in the year 1769. He was seconded in his exertion by Mr. Joseph Trumbull another of the tutors, who is now one of the judges of the superior court of Connecticut, —the gentleman so well known as the author of 'Mc Fingal.' Mr Howe and Mr. Trumbull found a most powerful coadjutor in Mr. Dwight; and by the united exertions of these gentlemen, assisted as they were by others associated with them in the government and instruction of college,—elocution, and every branch of polite literature, soon gained that place in the estimation of the students, which they ought ever to hold in a public seminary.

Mr. Dwight, however, distinguished himself in every branch; and it may be said, without hazard of mistake or contradiction, that no tutor in Yale College, ever received more unqualified applause as an instructor. His instructions seem to have had, at this time, substantially the same character as they are known to so many to have had after he came to the presidency. Every thing he said was peculiarly adapted to the circumstances of those he taught. He endeavoured to render his instructions practical; to convince his pupils that they were preparing themselves for active life, and that whatever they learnt would, directly or indirectly, contribute to their success. To comprehend the full importance of this feature in his character as an instructor, as well as the nature of the instruction, which, at this period, he was in the habit of communicating, it should be recollected that the present United States were then British colonies, struggling to emancipate themselves from foreign domination. He seems to have been very early aware of the rapid growth of this country, and of the importance which the American states would soon possess in the affairs of the world. His instructions were in some measure accommodated to these anticipations; and, on proper occasions, he took especial pains to impress on his pupils the importance of preparing themselves for this new state of things, and of being able to act successfully in the new scenes which were then opening before them. He rightly thought that the character of his country was in many respects, peculiar, and that of course peculiar qualifications were requisite in the management and di-

rection of its various concerns. What were the sentiments and language he held on this subject, in the early part of the revolutionary war, appears from an address which he made to the senior class in July 1776, on the occasion of their examination for the first honours of college. This address was published; and it affords a striking proof not only of the justness of the views which he then entertained of the future destinies of hiscountry,—but of the great progress also which he had then made in correct and manly composition.

It contains a bold outline of the nature and circumstances of the country, in which his pupils were about to act,—together with an animated appeal to their sense of duty and to their patriotism, to discharge their various duties with scrupulous integrity: and it is worthy of remark that an unusual proportion of the students who were educated at this period have been distinguished for their public services.—After describing the situation and prospects of the country, he proceeds,

'This, young gentlemen, is the field in which you are to act. It is here described to you, that you may not be ignorant or regardless of that great whole, of which each of you is a part, and perhaps an important one. The period in which your lot is cast, is possibly the happiest in the roll of time. It is true, you will scarcely live to enjoy the summit of American glory; but you now see the foundations of that glory laid. A scene like this is not unfolded in an instant. Innumerable are the events in the great system of Providence, which must advance the mighty design before it can be completed. Innumerable must be the actors in so vast a plot, and infinitely various the parts they act. Every event is necessary in the great system, and every character on the extended stage. Some part or other might belong to each of you, perhaps a capital one. You should by no means consider yourselves as members of a small neighbourhood, town or colony only, but as being concerned in laying the foundations of American greatness. Your wishes, your designs, your labours are not to be confined by the narrow bounds of the present age, but are to comprehend succeeding generations, and to be pointed to immortality. You are to act not like inhabitants of a village, nor, like beings of an hour, but like citizens of a world, and like candidates for a name that shall survive the conflagration. These views will enlarge your minds, expand the grasp of your benevolence, ennoble all your conduct, and crown you with wreaths which cannot fade, &c."

During Mr. Dwight's continuance at college as a tutor, the students were, more than once, dispersed in the country by alarms of the approach of the enemy. Different classes were stationed in different towns in the interior; by which measure,

the order and discipline of college were greatly relaxed, and the labour and responsibility of the government proportionally increased. Mr. Dwight, by his activity and vigour, did much towards checking the evils, which necessarily followed from such a state of continued alarm and virtual disorganization. He married, in the year 1776, Miss Mary Woolsey, daughter of Benjamin Woolsey, Esq. of Long Island; and, the next year, quitted his office of tutor in college. Soon after leaving college, he accepted an offer made him to enter the American army as chaplain; and served in this capacity, in the division commanded by General Putnam. This was a scene, in most respects, new to him, and required a very different exercise of talents from what is demanded in academical instruction and discipline. It is understood, however, that he very easily accommodated himself to his novel circumstances; and recommended himself highly both to the officers and soldiers, as well by his ordinary conversation and deportment, as by the discharge of his appropriate duties. His long habits of instruction and his love of the employment did not desert him here; and, it is said, that he occupied himself, whenever circumstances would permit, in communicating to the younger officers and others, the elements of science and literature. The ease with which he conformed to the habits of a camp, and the facility with which he seized upon the manner best calculated to attract attention, and to secure the object of his official performances, is strongly exhibited in a discourse which he delivered in the American camp, on a day of public thanksgiving for the surrender of General Burgoyne. This discourse was published,—but without his name; and he is known to have spoken of it, in the latter years of his life, as a trifling performance. Considered, however, as a discourse on such an occasion as the capture of Burgoyne, and addressed to such an audience as would be collected in a camp,—it affords no mean evidence of the variety and versatility of his powers. General Burgoyne, in his famous proclamation, had treated the Americans with the most pointed contempt:—His subsequent defeat and surrender had occasioned through the country an universal triumph; and in no place was the exultation higher, than in the American army. The passage of scripture, upon which this discourse was founded, is the following:—‘ *But I will remove far off from you the western army, and will drive him into a land barren and desolate, with his face towards the east sea, and his hinder part towards the utmost sea,* &c. Joel, ii. 20.

His continuance with the army, however, was but short. Early in the succeeding year, he was called to Northampton, by the afflicting intelligence of the death of his father. Some-

time before the revolutionary war, a project had been started by a number of individuals in Massachusetts and Connecticut, to form a settlement, under the patronage of the British government, in some part of the Missisippi Territory. The person most active and influential in this scheme, was General Phineas Lyman, of Suffield, Connecticut. The undertaking was attended, from the first, with great difficulties, and terminated most disasterously to all concerned. Among others, who went to the Missisippi country, in connexion with this expedition, was the father of Mr. Dwight;—and here he died some time in the year 1777. Mr. Dwight, as his father left a numerous family, which needed his assistance, resided now, for several years, with his mother at Northampton; and discharged, in this situation, every filial and fraternal duty. During this time he established an academy in Northampton, which gained very great reputation. He likewise preached occasionally in the neighbouring towns.

At the close of the revolutionary war, there were many questions deeply interesting to individuals and to the community, which came before the state legislatures; and especially in Massachusetts, where the revolution began. At this difficult time, Mr. Dwight was chosen to represent the town of Northampton, in the General Court at Boston. In the legislature, on several questions of great public expectation, he acquitted himself in a manner highly honourable to himself, and so as to give the strongest impression of his integrity, and sacred regard to justice. Several flattering offers were, about this time, made him, in different towns in Massachusetts, for settlement as a clergyman; all of which he saw fit to decline. He had now, likewise, some prospect of going permanently into political employment;—but he had little relish for the turbulence perhaps inseparable from this mode of life. Besides, he had formed very exalted views of the importance of the office of a minister of the gospel, and chose to employ his talents in the service of Christianity, in preference to entering on the uncertain pursuit of political distinction;—a pursuit in which the good to be done is usually less immediate, and which he undoubtedly thought, is less favourable to personal independence and general integrity of conduct. Accordingly, in 1783, he accepted of an invitation to settle as a clergyman, in the parish of Greenfield, in the town of Fairfield in Connecticut; and entered on the laborious and responsible duties of a parish minister. In Greenfield he continued ten years.

In the year 1785, he published an epic poem in eleven books entitled 'The Conquest of Canaan.' The writer of this article does not know at what age this poem was begun, nor how much

time was employed in its completion. It is certain, however, that it was commenced very early in life. As it was a principle, to which the author very generally adhered, in his literary pursuits, to exercise his own talents in that department of literature which he happened to investigate; it is not improbable that, in his youthful enthusiasm in the cultivation of polite literature, some parts of the Conquest of Canaan were among the first productions of his muse. It was brought into the form in which it was finally published in the twenty-fourth year of his age. A subscription of more than three thousand names was at this time obtained to aid in its publication; but the state of public affairs, in connexion with various other causes, induced the author to keep it from the public till the period just mentioned. It has been a general opinion among the friends of Dr. Dwight, that he would have more directly consulted his immediate popularity as a poet by selecting a subject for an epic, connected with the history of his own country,—or one better fitted to fall in with some prevailing popular fancy or opinion. It is not our intention to enter here into a criticism of the works;—and we have only to request those who join in its condemnation and talk largely about sublimity and pathos, to acquire a right of censure by reading at least *one* of its books.

In the year 1794, he published Greenfield Hill---a poem in seven parts. The subject of this poem seems to have been suggested by the situation of the writer. The village of Greenfield is situated on a pleasant and beautiful eminence affording an extensive prospect of the surrounding country and Long Island Sound. The landscape, therefore, is the principal subject of the first part of the poem. The happy condition of the inhabitants is the subject of the second, and was intended as a general description of the towns and villages of New England. Dr. Goldsmith had displayed in the Deserted Village, the wretched condition of the many, where great wealth, splendour and luxury constitute the state of the few. It was the intention of the author to exhibit, as a contrast, the blessings which flow from an equal division of property, and a general competence. He has here portrayed a state of society and manners, to which, it is well known, he was ardently attached. The other subjects of the poem are:—The burning of Fairfield by the British in the revolutionary war:—The destruction of the Pequods, a warlike race of Indians:—The clergyman's advice to the villagers:—The Farmer's advice to the villagers:—and The Vision, or Prospect of the future happiness of America.—This poem has had an extensive circulation; and, for this reason, it is the less necessary to give a more particular account of it here.

While Dr. Dwight resided at Greenfield, his reputation as a preacher, and as a man of literature and splendid talents, was constantly increasing and extending. As a preacher, at this time he was especially distinguished for the clearness of his thoughts, for the copiousness and elegance of his diction, and for the distinctness and fervour of his elocution. Hence he was often solicited to officiate on public occasions of great interest; and, on no such occasion, ever disappointed the expectations of his friends. Soon after his settlement at Greenfield he delivered a discourse at the ordination of a clergyman in a neighbouring town, which received more than usual applause. This sermon he refused to publish; but manuscript copies of it were taken by his friends, and extensively circulated. One of these copies reached England, and was in possession of Cowper. It is the discourse alluded to in a letter from Cowper to an American correspondent, in the life of that poet by Hayley. 'I return you my thanks, sir,' says he 'for the volumes you sent me, two of which I have read with pleasure, Mr. Edward's book, and the Conquest of Canaan. The rest I have not had time to read, except Dr. Dwight's sermon, which pleased me almost more than any that I have either seen or heard.'—

The same discourse, with some alterations, he delivered in New-Haven in the year 1812, at the ordination of the Rev. Nathaniel Taylor. It was then published.—Of his other occasional discourses which he delivered while at Greenfield, and which were given to the public, those which were the most finished and which gained him the greatest reputation, were, a sermon delivered before the legislature of Connecticut at the general election in 1791; a sermon on the authenticity and genuineness of the New Testament, delivered in New Haven 1794, at the lecture established by the clergy of Connecticut, on the day preceding the annual commencement of Yale College; and a sermon delivered (1795) before the society of Cincinnati, for the state of Connecticut. The second of these discourses exhibits him as a man of learning in his profession, and a most able reasoner on facts and circumstances. He had early observed among his countrymen, with the deepest regret, an increasing disbelief in the divine origin of the Scriptures, and a corresponding disregard of their authority and precepts. He had accordingly made the great question between Christians and Infidels the subject of very long and laborious investigation. If there was any one department of his professional studies, in which he felt peculiarly at home, it was this. His sermon on the authenticity and genuineness of the New Testament is a fair specimen, of his manner of reasoning on topics connected with this important subject. His sermon

before the society of Cincinnati was ' on the means of establishing public happiness'—and is worthy of attention as containing the outlines of those opinions on religion, government and morals, considered in their effects in civil society, which he continued, through the whole of his presidency, to inculcate on the minds of his pupils.

Dr. Dwight, during his residence at Greenfield, contributed largely, both in prose and verse, to a newspaper of a superior literary character published in New Haven, by Mr. Josiah Meigs, afterwards professor of mathematics and natural philosophy in Yale College, and since president of the University of Georgia. Of these communications, it may be proper to particularize a series of papers, in the manner of the British periodical essayist, entitled ' The Friend.'—They possess no inconsiderable excellence, both for style of composition, and for selection of topics. The sentiments are not only just, and of practical application,--but are particularly appropriate to the character and modes of thinking of those for whom they were intended. The series extended but to a few numbers. What prevented his continuing these papers is not known; probably his very numerous avocations, which in his estimation, might have a stronger claim upon his time. It is certain, however, that the cause of their discontinuance was not a failure of materials, or a want of disposition to pursue the undertaking. It is well known, that he ever considered this species of writing as affording one of the fairest fields for literary enterprise; and he would have engaged, with his accustomed ardour, at any time, during the ten last years of his life, in a new series of periodical papers—if he could have easily found what he considered a proper vehicle for his communications. He has indeed, left, it is reported, several numbers in continuation of the Friend, —some of which he wrote during the last weeks of his life. It is much to be regretted, that circumstances were not more propitious to his engaging anew in this favorite undertaking; which, from his extensive knowledge of mankind, and his enlarged views of society and manners, he was so peculiarly qualified to accomplish.

Soon after Dr. Dwight removed to Greenfield, he opened an academy for the reception of youth of both sexes; which soon gained a reputation, perhaps, unparalleled in any similar institution in this country. It was indebted, for its celebrity, to no extraneous aid whatever; and rested, for support, solely on the talents and exertions of the founder. Numbers flocked to it from all parts of Connecticut,—from the neighbouring states,—and even from remote parts of the union. Young

men, at this place, passed through the same course of instruction as is usually pursued in colleges; and some were prepared to enter advantageously on professional life. The school, the pleasant situation of the village, and the celebrity of Dr. Dwight as a preacher and instructor, drew to this spot most respectable strangers in their passage through the country; and Greenfield become a place of great notoriety and fashionable resort. Perhaps no place was ever more benefited, in so short a time, by the labours of any individual, whose only resources were, the exercise of talents, and the influence of personal character.

On the death of President Stiles, in May 1795, the public attention was immediately turned towards Dr. Dwight, as his successor. He was accordingly elected to the presidency of Yale College, at the first meeting of the corporation; and inducted into office the succeeding September. Very high expectations were indulged from his labours and influence in this new station. He was already well known as an academic instructor—and had given the public repeated proofs of the extent of his capacity, and of peculiar qualifications for directing the youthful mind in the pursuit of knowledge. It ought here to be remarked, that Yale College has been supported, from its first establishment, chiefly, by the countenance afforded it by the clergy and men of education generally, and by the individual exertions of those, who have filled its offices of instruction. The aid, which it has occasionally received from the legislature of the state, has been granted only in cases of absolute necessity; and private munificence it has experienced in a still less degree. While some other similar institutions, in our country, have received almost unlimited public and private benefactions, Yale College has had to struggle on, under the hard pressure of comparative poverty. This want of adequate public patronage has, indeed, been seen and lamented by many distinguished individuals; and great exertions have been made to lead the public mind to more enlarged and liberal views respecting that institution. But as long as so many find an interest in representing all appropriations for its benefit as worse than useless,—any material change, in this respect, is to be regarded as hopeless. Yet in these circumstances, Dr. Dwight did not disappoint the expectations of his friends. Under his superintendance the College soon began to flourish beyond all former example; and perhaps its reputation was never more extensive than at the time of his death. When he entered on the duties of the presidency, the office of professor of divinity was vacant; and, as several ineffectual attempts had been made to procure a proper incumbent, Dr. Dwight engaged to discharge the duties of this office likewise. A few

years after, he was regularly elected to the divinity chair; which he filled, till his death, with unparalleled reputation and success.

It may not be improper to introduce here some more particular account of the variety and extent of the labours upon which he now entered. As President, it was his duty to superintend all the general interest of the college; which, in so large an establishment, demanded no inconsiderable portion of his time and attention. He likewise took upon himself the whole instruction of the senior class in rhetoric, logic, metaphysics, and ethics,—heard two disputations each week, and once, each during the same period, gave the class an informal lecture on the first principles of theology. As Professor of Divinity, it was his custom to deliver, in the forenoon of each sabbath, a discourse forming part of a general system of theological science,—which it usually took four years to complete; and, in the afternoon, a discourse on some miscellaneous subject, such as he judged the circumstances of his audience to require. In addition to this, he had under his care and instruction a class of graduates, pursuing the study of theology, with professional views. Besides these various duties, more immediately connected with his station,—he was ever ready to give his advice in the formation of new literary institutions; and from his known experience and success in academic discipline, he was not unfrequently applied to on this subject. He was often consulted in the concerns of the neighbouring churches; was occasionally a member of the general association of the congregational clergy of Connecticut; and was several times a member of the general assembly of the presbyterian clergy of the United States;—in the business of both of which bodies he took an active part.

Among the literary labours of Dr. Dwight, while in the presidency, may be mentioned, in the first place, his systematic discourses; containing a complete view of theoretical and practical divinity. These discourses he composed with great care; frequently revised them; and has left them prepared for the press. He has left, likewise, in the same state of preparation, many discourses on miscellaneous topics, and several dissertations on subjects connected with the proofs of Christianity and biblical literature. Another work, upon which he bestowed great labour, and which he has left ready for publication, is an account of the States of New-England, and the State of New York; collected in various tours through this part of the United States, during the last twenty years of his life. This is a work, in the preparation of which, he took much more than usual interest. The representations of society and manners, in

this country, by most foreign travellers, he considered as mere caricatures,—calculated to make not only false impressions at first,—but to do the United States a lasting, if not irreparable, injury. He thought, likewise, that an exact transcript of the present state of this country, would be a valuable record for posterity; as, from the rapid progress of the United States in population and improvement, and the consequent change of manners and pursuits,—much valuable information now to be obtained, would, in a few years, be lost for ever. Some opinion of the ardour with which he prosecuted this work, and the labour and expense attending it, may be formed from the fact, that, to collect information, he travelled, chiefly on horseback, more than twelve thousand miles,—besides maintaining an extensive correspondence with gentlemen of information in various parts of the extensive territory which he had undertaken to describe. The work is historical, topographical, and statistical; and will undoubtedly be considered as an invaluable legacy to his country. He has likewise left an original poem, which he completed only a few days before his death. He also took a very active part in the formation of the Connecticut Academy of Arts and Sciences; and, as their printed transactions will show, contributed several papers to the collections of that body.

It now remains to give some general view of the character of Dr. Dwight,—as a man of talents and literature,—as a preacher,—as an academic instructor and governor,—and as a member of society, in the various relations of public and private life. If genius is an attribute which is seen in execution; if it consists in judgment, imagination, sensibility, and ardour, harmoniously combined in the prosecution and accomplishment of its purposes;—it will be readily admitted by those who have attended to the character of President Dwight, that he was endowed with this quality in a very eminent degree. His mind was evidently formed for the highest efforts of intellectual vigour. His judgment was clear and discriminating; his memory retentive; his imagination strong and active; and his sensibility acute. But, what perhaps chiefly distinguished him, was a mental energy,—a faculty of at once summoning to his aid all the powers of his understanding,—a readiness,—a promptitude, which, on no occasion, deserted him. Hence, as a public speaker he appeared to uncommon advantage; especially in extemporaneous addresses.

As a man of literature his information was various and extensive. It should here be recollected, that from the age of twenty-three or twenty four, an account of the weakness of his eyes, almost all his reading was done by the aid of others, and almost all his writing by an amanuensis. No person, probably,

thought less highly of every species of learning, which is calculated merely for ostentation. His literary acquirements were all designed for practical utility; and were made, in some way, subservient to the purposes of life. In the Latin classics he was uncommonly well versed; and his inaugural address, as well as his other addresses in the Latin language, were characterized by great neatness and classical propriety of expression. After he came to the presidency, he commenced a critical review of the Greek poets; but the weakness of his eyes obliged him to desist from the undertaking. In oriental literature, likewise, from the same cause, he was never able to make that progress which he ardently desired. In history ancient and modern, as well as in political, ethical, and especially theological science, he was profoundly versed. He was peculiarly fond, too, of books of travels,—geographical works and statistics. No person, perhaps, was more thoroughly read in the poetry and eloquence of the English language; and, generally, in whatever relates to philosophical criticism. He had likewise a strong relish for natural science; was well versed in the different departments of natural philosophy; and did much towards increasing the means of instruction, in every branch of physics, in the seminary over which he presided.

As a preacher, Dr. Dwight possessed very uncommon excellences,—especially for an academic pulpit. Not confined to a set round of topics, or a uniform method of treating them, he easily accommodated himself to the varying circumstances of his audience; consulted their taste; and, by avoiding all unnecessary causes of offence, laboured to render his instructions acceptable. With a person and attitude dignified and commanding,—a voice deep-toned and susceptible of every modulation,—an elocution clear, flowing and impetuous,—he never failed to command the most respectful and profound attention. His way to persuasion was first to convince the understanding. No man held, in lower estimation, addresses merely to the passions of an audience. The rhetorical expedients, sometimes employed to excite a momentary feeling,—a sudden blaze of passion, which lasts no longer than the occasion which produced it,—he ever condemned as nugatory, or positively hurtful. His own method was, by a clear, full, and intelligible exhibition of his subject, to secure the conviction of his hearers, before he ventured to make any direct address to their feelings. Indeed the persuasion which he aimed at was rather the result of the hearer's own determination, on a full consideration of the case, than the effect of surprise or sudden excitement. It was his object in all his public discourses, to be full and minute, without being tedious; and to exhaust

his subject without repetition. Hence it was the usual fact with his hearers, that they departed, entirely satisfied, that all the circumstances necessary for forming an opinion on the topic discussed, had been fully and fairly exhibited.

The opinions of Dr. Dwight, on those points of theology which have been the principal ground of difference in the christian world, were probably more accordant with the sentiments of his venerable ancestor, President Edwards, than with those of any other man. Yet, as his object was the truth, he rested his theological system on the scriptures only; and trusted to the explications of men, however eminent for their talents and piety, so far only as he saw them conformable to that infallible standard. No man was more firm in his opinions or farther from admitting the indifference of error; yet, aware of the diversity among mankind in their modes of thinking, and of the strong influence of education, prejudice, and passion even over the best of men,—he never expected to find entire uniformity of sentiment, and was disposed to treat, with a liberal indulgence, those who differed from him in points not plainly fundamental.

As an instructor in the liberal arts and sciences, Dr. Dwight was unrivalled. In communicating useful knowledge, he found his highest gratification. His familiarity with works of taste, and the profound judgment which he exercised in this department of literature, connected with his great copiousness of illustration and fluency of utterance, and a zeal which seemed never to abate,--gave to his rhetorical instructions an interest and importance, which those only who have been his pupils, can duly estimate. His views of criticism were liberal; and, in all matters of taste, he exercised great independence of judgment. In poetry he would neither discard the rules of Aristotle; nor would he submit entirely to their direction. In spite of authority, he ever maintained that Paradise Lost was superior to every other epic production; and that the Deserted Village held the first rank in pastoral poetry. In eloquence he considered Demosthenes the first among the ancients, and the elder Pitt the first among the moderns.

In logic, metaphysics, and ethics,—studies which have few attractions for the giddy and the superficial,—he was always able, by his great copiousness and familiarity of illustration, to enliven and render interesting the most dry and unpromising discussions. He was in the habit of indulging in considerable latitude of remark, both at the recitations and at the forensic disputations of his class. Whatever was suggested by the subject under review, which he thought might be useful to his pupils, either as connected with their scientific pursuits,

or as affording them valuable information, for their future intercourse with mankind,—he always introduced it; and in a manner to make a lasting impression. Hence, though he usually detained his class, twice the time allotted to a single exercise, his recitations were seldom thought tedious. Indeed, the great majority of his pupils were ever eager to attend upon his instructions; and went to them,—not as to the performance of a task,—but as to a high mental entertainment.

In the government of college, Dr. Dwight was peculiarly successful. It was his object from his entering on the duties of the presidency, to adopt a course of discipline energetic in its character, and at the same time, accommodated, as far as possible, to the popular motions of liberty and personal independence. Hence many of the ancient regulations and customs, originally adopted from the practice of foreign universities, were gradually changed; and a system more parental, and better suited to the character of the country, was introduced in their place. In carrying this system into operation, much knowledge of the human character was requisite, united with great firmness and discretion. What success attended his labours, in this important department, is sufficiently shown by the fact, that during the whole period of his presidency,—and for the last fifteen years, the number of students has fluctuated from two hundred to three hundred and twenty, composed of great diversity of character, being collected from almost every state in the union,—no general opposition to the collegiate government has existed, or even a momentary interruption to the regular operation of law.

In private society Dr. Dwight possessed uncommon powers to please and instruct. With an inexhaustible stock of knowledge on almost every subject, and an ease of communication to which a parallel can hardly be found, he easily accommodated his remarks to the character and means of improvement of those with whom he conversed; and seldom failed to excite the highest respect and admiration. From the weakness of his eyes, already mentioned, and his consequent inability to employ himself much in reading, except by the assistance of others,—he was led to devote more of his time to the society of his friends, than perhaps in other circumstances he would have judged expedient. He ever considered the diversified conversation of a social circle, as affording the most rational, and at the same time, the most entertaining of all amusements.

Dr. Dwight possessed from nature a constitution of body unusually firm and vigorous. His health he ever guarded with studious care; and, by temperance and exercise, preserved to the last much of the freshness and activity of youth.

About two years before his death, he was attacked with a disorder, which was accompanied with great pain, and which, from the first, threatened the most alarming consequences. The nature of the disease, however, was not correctly understood; and he was led to hope, from the general state of his health, that it would soon yield to medical skill. But all prescriptions were unavailing; and the disease continued to advance with a regular and fatal progress. During the last year of his life, the pain he often endured, was exquisite; and his robust frame finally sunk under excess of suffering. His patience under the severest agonies of distress, and his resignation to the divine will, were such as suited the character of ardent piety which he had so long sustained. On Wednesday morning, the eighth of January last, he became lethargic; and as he afterwards revived, his mind remained in a degree clouded, and perhaps never afterwards recovered its former tone and clearness. He conversed, however, on the two following days, on many subjects correctly, and in his characteristic manner; but his attention seemed diverted from his own case, and he was occasionally incoherent in his remarks. In this manner he languished, till, early in the morning of the succeeding Saturday,—as became a christian and especially a christian minister,—in the accents of fervent prayer, he yielded his spirit to God who gave it.

It may be proper to add, that Dr. Dwight was a member of most of the literary and philosophical societies in this country; and was honoured with the degree of Doctor in Divinity, by the College at Princeton, in the year 1787; and with the degree of Doctor of Laws, by the University of Cambridge, in the year 1810.

ART. II.—*An Essay towards settling the Claims of* Godfrey *and* Hadley *to the Invention of the Reflecting Quadrant.*

IT has been a standing theme of assertion to all American authors both learned and unlearned,—that the honour of inventing the Reflecting Quadrant was surreptitiously taken from their countryman, Mr. Godfrey, by an Englishman of the name of Hadley. The question is, in itself, of no great practical importance; but, as it has long been a subject of altercation between ourselves and the English—as neither party has yet condescended to adduce any documents for the substantiation of what it asserted—we think a plain, unvarnished statement of the facts relative to the dispute will not be an unacceptable office to those of our readers who love peace as well as we do.

The late ingenious Mr. T. Godfrey is still remembered by several old persons in Philadelphia; and some anecdotes illustrative of his character have been left by his friend and acquaintance, Mr. James Logan.* *See Miller's Retrospect, vol. I, p.* 470. Of the biography of Mr. John Hadley little remains. From the Philosophical Transactions, it appears, that he was Vice President of the Royal Society of London before the year 1723, and after the year 1731. In different books we find some scattered remains and notices of Hadley,—from which we ascertain, that he was distinguished by his skill and ingenuity in the construction and improvement of optical instruments. *See Smith's Optics, Pref. p.* 6. *and vol. II, p.* 301, 368, 376.—*Also Long's Astronomy, vol. II, p.* 468, 721, 723. *And Philosophical Transactions for* 1723, *No.* 376—*and for* 1731, *No.* 420 *and* 425.

Sir Isaac Newton invented an instrument similar, in its principles, to the Reflecting Quadrant, and sent a description and drawing of it to Dr. Halley, when he was preparing for his voyage to the isle of St. Helena in the year 1698, for the purpose of observing the variation of the magnetic needle. It is a remarkable circumstance, that this important invention remained unknown to the world for about 30 years. After the death of Halley, the account of the instrument, in Newton's handwriting, was found among Halley's papers, by Mr. Jones; and is published in the Philosophical Transactions for the year 1742, No. 465; and also in the Abridgment of the Philosophical Trans. by Hutton and others, Vol. 8, p. 590. Hadley was acquainted with Newton, and therefore it may be supposed that he had received some information from him respecting the construction of this instrument. But in this case it seems probable that Hadley would have acknowledged his obligation to Newton; which he has not done, however, in his account of the Quadrant, in the Phil. Trans. for 1731, No. 420. His friend and acquaintance, Dr. R. Smith, ascribes the invention and construction of the quadrant to Hadley alone,—and gives not the slight-

* Dr. Franklin has also given us a fact or two concerning him. 'I had hitherto continued (says he) to board with Godfrey, who, with his wife and children, occupied part of my house, and half the shop for his business; at which indeed he worked very little, being always absorbed by mathematics.'—And, in another place, we find in the list of those who composed the *Junto*—'Thomas Godfrey, a skilful though selftaught mathematician, and who was afterwards the inventor of what now goes by the name of Hadley's dial; but he had little knowledge out of his own line, and was insupportable in company, always requiring, like the majority of mathematicians, that have fallen in my way, an unusual precision in every thing that is said, continually contradicting, or making trifling distinctions; a sure way of defeating all the ends of conversation. He very soon left us.'

est hint of his obligation to any of the great men who flourished in that busy age of philosophy.—It may be proper to observe, in this place, that the celebrated Dr. Hooke first conceived the idea of a reflecting instrument for taking angles; and even made one with a single reflection; which, of course, did not answer the purpose. *Hooke's Posthumous Works, p.* 503. Newton considered Hooke's design; and accomplished it by means of two reflections. But, as has been said before, Newton did not construct an instrument of this kind; and the invention remained unknown till Hadley revived it in 1731.

We shall now examine and compare the data upon which the respective claims of Hadley and Godfrey are founded; and endeavour to ascertain the person to whom the priority of invention is due.—Mr. James Logan's letter to Dr. Halley concerning Godfrey's 'Improvement of Davis's Quadrant transferred to the Mariner's Board', is dated at Philadelphia, May 25, 1732; as appears from Miller's Retrospect of the 18th Century, Vol. I, p. 469; and the Phil. Trans. Vol. 38, anno 1734, p. 441. Mr. Godfrey's letter to the Royal Society concerning his 'Improvement of Davis's Quadrant,' is dated at Philadelphia, Nov. 9, 1734. Mr. Logan states, that Godfrey's letter was written in 1732,—but was not sent to the Royal Society till the close of the year 1734: when it was published in their Transactions for that year, Vol. 38. He says, further that, in the year 1730, Godfrey constructed 'a reflecting instrument by speculums,' for finding longitude; and that 'either this or another instrument was taken to sea in the winter of 1730, and was brought back to Philadelphia before the end of February 1731.' *Miller's Retrospect, vol. I, p.* 479. The preceding facts appear to exhibit all the evidence upon which Godfrey can found any claim to the invention of the Reflecting Quadrant. Godfrey and Logan describe the construction of the instrument,—but they do not demonstrate any thing respecting the principles of its mechanism.

Mr. Hadley's claim to the invention of the reflecting quadrant is founded upon the following facts:—In the Phil. Trans. No. 420, May 13, 1731, we find a paper entitled, 'The Description of a new Reflecting Instrument for taking Angles at Sea. By John Hadley, Esqr., Vice President of the Royal Society.' *See also the Abridgment of the Phil. Trans. by Hutton and others, Vol.* 7, *p.* 486; *and Smith's Optics, vol. II, p.* 368. This paper contains at large, the description and use of the instrument, with the demonstration of the optical and geometrical principles of its mechanism. The paper was accompanied by the instrument made of wood.

The foregoing statement of facts brings so near together the times of the invention of the two instruments, in Europe and America, that we cannot suppose, as our writers allege, that the instruments are the same, and that one was, consequently, taken from the other. We must conclude, that both Godfrey and Hadley were *original* inventors of the Reflecting Quadrant, (if the instruments are similar); and that neither had heard of the invention of the other; although, as the account of Hadley's Quadrant was published a long time before the publication of that of Godfrey,—the priority of invention appears to be clearly due to the former.—We are farther confirmed in the belief, that the honour of the invention is due to Godfrey and Hadley independently,—from the two following circumstances:—In consequence of the strictures of some American authors upon Hadley's integrity, the writer of this paper was induced to address a note to the late Dr. David Rittenhouse of Philadelphia, about the end of November or the beginning of December 1794,—desiring to know whether he possessed any particular information respecting the invention of the instrument under consideration. The doctor replied, in writing, that 'he knew Mr. Godfrey and his Quadrant, and had no doubt that both Godfrey and Hadley were *original* inventors (an event which had often happened upon other occasions); that both instruments depended upon the same principles; and that Hadley's was more convenient in practice.' Dr. Rittenhouse did not intimate that Godfrey ever accused Hadley of plagiarism; which he would probably have done if he had believed him to have been guilty of such ungenerous conduct.—It appears from the Life of Mr. Benjamin West, by Mr. Galt,—that Mr. Godfrey was one of West's early associates. Hence it is reasonable to suppose that Mr. West knew all the circumstances of Godfrey's invention of the reflecting quadrant, and that if Godfrey had entertained any suspicion of plagiarism on the part of Hadley, he would have expressed it to his friend and associate. But no intimation of this kind occurs in Galt's book which is compiled from materials furnished by Mr. West himself.

Godfrey and Logan do not appear to have known that a full and complete account of the construction, uses and *rationale* of Hadley's quadrant had been published in the Phil. Trans. (1731), for they do not refer to that volume in their letters to Dr. Halley, in 1732 and 1734.

John Werner, a native of Nuremberg in Germany, who flourished about the beginning of the 16th century, first proposed the method of finding the longitude at sea by observing the distance of the moon from some of the principal fixed stars. It is a remarkable circumstance, that this method of finding the

longitude, which is now so successfully practised by navigators, was not attempted for about 230 years after it was known, for want of a proper instrument (such as Hadley's quadrant) by which observations of the moon's distance from the fixed stars could be made with sufficient accuracy. *Lalande's History of Astronomy, Edit. of* 1764, *p.* 120.

In a letter dated at Philadelphia, June 28, 1734, Mr. Logan states that he had transmitted an account of Godfrey's quadrant to Dr. Halley in May 1732, and wonders that Halley had never acknowledged the receipt of his communication. *Retrospect, p.* 479. No doubt, there was at the time, some sufficient reason, for not acknowledging the receipt of Logan's account of the instrument which cannot now be explained. One reason might have been, that Logan's paper was not accepted by the Royal Society, because Hadley's account of his invention of the same instrument had been already published in the Phil. Trans. for 1731;—a conjecture which derives some weight from the fact that the account already published was more complete and satisfactory than the second. But whatever the cause might be, Mr. E. Hazard's 'conjecture, that justice had not been done to the original inventor' seems to be groundless; for the Royal Society, as a body, could have no interest in the admission or rejection of a paper; and their donation of 200*l.* sterling to Godfrey, for the purpose of relieving his necessities, precludes the suspicion that they were not inclined to act fairly toward him. *Retrospect, p.* 480. It appears that Mr. Hazard did not know, though many years had elapsed, that Hadley's account of his quadrant was communicated to the Royal Society in May 1731, and published in the Phil. Trans. for the same year; otherwise his censure of the conduct of the society in the case of Godfrey would be preposterous.

ART. III.—*A Review of the Systems of elementary Education in the United States: with a brief Account of the American Colleges.*

CONGRESS have been twice invited by Mr. Madison to deliberate upon the propriety of establishing a national seminary of learning;—and as such an establishment is somewhat likely to take place, it seems to be a fit occasion of reviewing cursorily the institutions of the same sort which are already founded in the United States. Without any further introduction, therefore, we shall first give a sketch of the systems adopted in the different states for the promotion of common school learning,—and then go on to detail as concisely as we can the history and present state of the American colleges. For some of the facts which we shall have occasion to state,

we are indebted to well known authors: but there are others again which, we think, have never before been published,—and for which we hold ourselves personally responsible.

Every one has heard of the enlightened system of common school education, which has been uniformly pursued by the inhabitants of New England. Every state is cantoned out into districts, embracing a sufficient population to supply a school; in each of which a committee is appointed to investigate the qualifications of the teachers,—to attend the periodical examinations of the pupils,---and to manage the funds and general concerns of the institution. Wherever the population is so sparse that the children from the various parts of a full district could not be daily collected in the same house, a due proportion of the school fund is assigned to the few families who are contiguous; and if they can hire a master at the common price for three or four months, they are content, in many instances, to employ a mistress at a low rate (for about one dollar a week) during the remainder of the year. In districts composed chiefly of the affluent, an annual contribution is frequently made; which, when added to the regular appropriation of the state, enables them to procure a teacher of more than ordinary accomplishments. By these means all the small towns in the northern states are well supplied with common English schools. In Massachusetts, every township containing fifty householders is compelled by law to have a school of this sort; and as the same system obtains, with some immaterial modifications, throughout the whole *sisterhood* (as our countrymen would have us say), our readers must hear for perhaps the five hundredth time,---that there is scarcely an adult individual in all New England who cannot read, and write, and keep accounts. All these operations must be performed almost every day of their lives; and, among the other sources of independence, we may even enumerate this, that they are not under the continual necessity of running to others for what reading and writing and cyphering they may wish to have done. By the same system, too, they acquire a thirst after knowledge (we do not allude particularly to their importunity in questioning strangers); and in almost every considerable neighbourhood there are circulating libraries of useful books, which have been purchased conjointly by the inhabitants. But, what is perhaps of more consequence than all the rest, the sober habits of industry which some children acquire by a spirit of rivalry, and which others have beat into them by a twig of beech, give them an early determination to labour, which never after forsakes them. And when we add to all these causes the absolute necessity of working, or of starving, we shall not be at a loss to account for the

intelligence and enterprise for which they are so deservedly celebrated.

We cannot say so much for the state of New York. Before the Revolution nothing of consequence had been done for the promotion of common school learning:—private munificence did all that *was* done; and since that period,—though the different legislatures have been sufficiently liberal in their appropriations,—their occasional and irregular efforts have not yet been able to get the thing a going in any systematic and effective way. Some time elapsed, after the restoration of peace, before the government adopted any measures at all for the formation of a school-fund; and *then*, as soon as the amount of supplies had become considerable, they were all appropriated to the support of Columbia and Union colleges. Not long afterwards, however, (we are sorry it is not in our power to give precise dates,) the original plan was again taken up. Unsettled lands were set apart for the establishment of the requisite funds; and it was enacted, that as soon as the appropriations yielded $100,000 *per annum*, the state should be divided into districts, which, when furnished with a house of prescribed dimensions, should receive enough of the revenue to support a teacher. The results of this system are already beginning to be developed; but they never can be fully and extensively unfolded, till the population of the state has become more compact, settled, and uniform.

The miscellaneous nature of the original population both of New York and of New Jersey, was utterly incompatible with that harmonious co-operation by which alone a uniform system of any kind can be established. In both, accordingly, each different sort of people had its own way of education; and, though the former has been so far weaned from its early disagreement on the subject, as to see the necessity of binding the different systems into one by the tie of legislative enactment, the latter still feels the effects of her original prejudices, and has taken no steps towards establishing any uniform plan of instruction. The legislature has done nothing at all; and the little that can be done by the counties and villages will never enable them to procure even ordinary instructors. The consequence is, that perhaps in few states of the Union, are the great mass of the people so misinformed, or so destitute of any information whatever.

The general observation which we made concerning New York and New Jersey is applicable, with still greater force, to the state of Pennsylvania. Its original founder had the best of all opportunities to establish funds for the promotion of common learning; but it was not to be expected that a person who

had himself succeeded so well in the world without using good orthography or good grammar (we have seen some of his own letters) would be over solicitous about enabling his descendents or successors to spell or to write with accuracy; and accordingly he did not, so far as we are informed, appropriate a single inch of ground to the support of elementary schools. His brethren were most of them as illiterate as himself; and though a few enterprising individuals contrived to establish some well regulated schools for teaching the elements of the higher parts of literature, nothing was ever done for the purpose by the proprietary or colonial government. That government did one thing, indeed, which was indirectly calculated to prevent the establishment of any uniform plan on the subject. The liberal and enlightened toleration which they extended to religions of all sorts, contributed,---with the fertility of the soil and the hospitality of the climate,---to draw together emigrants from so many different quarters and of so many different denominations, that any thing like harmony and co-operation was quite out of the question. The Germans were immoveable in the resolution of sticking to their own language: the various religious sects were mutually jealous and hostile; and it was perfectly idle, therefore, to think of making them consentient upon a subject which was, perhaps more than any other, calculated to bring their several interests and prejudices into opposition. Before the Revolution, accordingly, the Germans had there own elementary schools; and the English, the Scotch, and the Irish got along as well as they could. Nor was the case much altered for a long time after the formation of a state government. The same causes which originally prevented any harmony, still contributed to keep up a dissonance; and while in some districts the inhabitants were obliged to do without any instructors at all, in others, again, they were content to hire ignorant pretenders at the rate of four and six dollars a year. The case was, however, considerably different in Philadelphia; where there were, in general, good teachers, and well-regulated schools. Within a few years, the subject of education has been more generally attended to; and the legislature has gone the length of enacting,- -that those parents who can make it satisfactorily appear that they are themselves unable, for want of funds, to instruct their children, may have them instructed at the expense of the county. In many districts, the greater part of the poor do not know there *is* such a regulation; and the greater part of those who do know it, would rather bring up their children in utter ignorance, than be subjected to the ignominy of appearing upon the poor-list. Indeed the remedy does not touch the evil in hardly any point.

A want of funds is certainly a great obstacle to the general prevalence of education; but a want of inclination is a much greater; and while the legislature is endeavouring to silence the complaints of those who have no money, they should also strive to do away, or, at any rate, to counteract the prejudices of those who have. Our meaning is, in short, that parents should be compelled by law, to educate their children in some way or other.

We must carry our complaining spirit also into the states of Delaware and Maryland. In both, a commendable degree of attention is beginning to be paid to the more refined and elegant pursuits of literature but in neither, is the more useful and less ambitious department of common education sufficiently promoted. There are many good schools in Maryland, we confess: many affluent gentlemen have also provided for the education of their own children by employing excellent private masters; and the state itself has, in many instances, made liberal donations to the English department of the county academies :—but it has not yet adopted any co-operative and uniform plan for the general diffusion of common education throughout the great mass of its inhabitants. We are no advocates for the interfering and meddling disposition which we see in some legislatures; but, if ever there was a case which called for the interposition of the hands and the eyes of government, we think it is to regulate and to watch over the elementary education of its subjects.

We can say very little in favour of Virginia on the score of common-school education. Many years ago, it is true, the Assembly listened to the report of a bill, containing the outline of a plan which united the excellences both of the Jesuitical and of the New-England system. It was proposed to divide the state into districts, which should each have an English school at the public charge. Out of these schools were to be chosen, at the periodical examinations, all those pupils who, in the opinion of competent judges, should possess talents and industry enough to merit a place in the higher seminaries. In these higher seminaries, again, the sheep were to be separated from the goats:—and thus the colleges would at last be stocked with those students only who were, in every respect, worthy of a liberal education. The scheme, however, has never been put into operation;—and Virginia still retains her old aristocracy of learning and of wealth.

The same remarks are applicable to the States south of Virginia. None of them have yet taken effectual measures for the promotion of common learning. All their schools were insti-

tuted, and are continued, by private enterprise; and most of our countrymen in the south are perhaps indebted to New-England for their education, as well as for their tin-ware.—The miscellaneous population of the western states will for a long time prevent the establishment of any uniform system of elementary instruction. Much more has been done beyond the mountains, however than we could have expected: and in Ohio and Indiana particularly, many good English schools have already been established.

Besides the kind of institutions which we have now been considering, there is, in our large cities and towns, another method of educating the children of poor parents particularly. We allude to what are called *free schools;*—a species of establishment which originated very certainly in the purest of motives, and which has certainly done the community a great deal of good. After all, however, they are attended with many disadvantages which can never be removed, it strikes us, without the interference of government. Besides, the degradation which must always be connected with such an institution,—the benevolence of private individuals will never create a sufficiency of funds to employ the most competent instructors; while, on the other hand, the number of pupils generally put under the tuition of such as are employed, is absolutely incompatible with a thorough discharge of their duties to all. Under this head, we may also mention the adoption of Mr. Lancaster's system of education. The first school of the kind was established in Georgetown, in the district of Columbia: similar schools have since been instituted in a great many other parts of the country; and notwithstanding the discouragement of a few failures, we think there is reason to expect that, in no great length of time, an institution of the same sort will be found in every considerable village in the United States.

Female education has been sufficiently attended to in this country;---but it has not always been attended to in the right way. Many useful schools, under the tuition of well educated ladies, have been established in most of our cities: but we have to repeat the standing complaint, that they are devoted in too many instances, to the mere ornamental parts of education. This subject stands, we apprehend, in the clearest light. Mere ornament is a thing of nought;---and if the system of female education goes on the course which it has now taken, the daughters of our fair countrywomen may make good musicians, good dancers, and good frolickers,—but we are afraid they will never make good wives.

Thus we have endeavoured to draw, in a very few lines, a rapid sketch of American education in the elementary parts of learning; and though we have given it by no means a flattering likeness, we have to congratulate our countrymen that it looks no worse,—especially when we compare it with what we see in most of the countries in the old world. Such a comparison, however, should never make us remit our endeavours at amelioration. Much certainly remains to be done; and we are sure it will never be done effectually, till the different legislatures take the subject into their own hands. The wealthy can educate their sons without extraneous aid; but what proportion do the wealthy bear to the middling and the poor; and where, in short, are the great body of our young countrymen to look for adequate instruction, if the legislature refuses to turn its averted eyes upon their necessities?—But we must now turn our own eyes to another part of the subject. A literary appetite always grows from what it feeds on; and the general prevalence of common learning will soon create a demand for liberal education. We shall proceed, therefore, to point out very briefly the means which our country possesses for instruction in the higher walks of literature.

The first college founded in America was originated by Mr. John Harvard; who, in the year 1638, made a donation of 777*l.* expressly for that purpose. The institution had, at first, no charter at all; nor could its managers afterwards obtain one, though they made application to the king; but they proceeded nevertheless to confer degrees, and their parchment was generally as much respected as if it had been accompanied by the broad seal of the crown. During its earliest stages, the mere belles lettres and polishing of education was very little attended; while, if we may judge from the writings of some of its presidents, the substance and solidity were very successfully imparted. The case is now directly reversed; the mathematics and severer studies, having yielded to the belles lettres and the languages. The superintendence of the university is committed to the hands of some of the most influential men in the state; and its annual revenue amounts at present to more than $40,000; of which $10,000 are paid by the state, and the remaining $30,000 are derived from vested funds and tuition-money. There are upwards of twenty professors; thirteen of whom are constantly employed in teaching the students in the ordinary way,—while the remaining seven deliver occasional courses of lectures upon medicine, upon natural and moral philosophy, upon history, upon theology, and upon various other scientific subjects. There is one professorship which we mention with peculiar satisfaction;---the professorship of the Greek

language;---an institution which does the greatest honour to the unknown individual who generously endowed it with funds. Connected with the same subject, we allude with pleasure, also, to the abolition of Latin translations to Greek originals, as well as to the introduction of Dalzel's Collecteana Græca Minora et Majora;---two works which, if thoroughly studied, are calculated to give the student a better acquaintance with that opulent and copious language, than any other equal quantity of reading whatsoever. An edition of both works has been printed at the University Press: and we hope, before long, they will supersede, in all our colleges, the books which have been heretofore used.---The Latin course in Harvard consists of the Discerptæ Latinæ;---the text-books for logic and metaphysics, are Locke's Essay, and Mr. Stewart's Elements; that for mathematics, Webber's System; for natural philosophy, Enfield; and for rhetoric, Blair's Lectures. The average number of students has of late been between 280 and 300; most of whom belong to Massachusetts, though not a few are from the southern states. The philosophical apparatus is very extensive; and, more than 25 years ago the library consisted of about thirteen hundred volumes.

We subjoin a list of the Presidents.

Elected in			
1640	Rev. Henry Dunstar	resigned in	1654
1654	Rev. Charles Chauncey	died	1671
1672	Leonard Hoar, M. D.	resigned	1674
1675	Rev. Urian Oaks	died	1681
1682	John Rogers	died	1684
1684	Rev. Increase Mather, S. T. D.	resigned	1701
1701	Rev. Samuel Willard, Vice President	died	1707
1708	Hon. John Leverett, S. R. S.	died	1724
1725	Rev. Benjamin Wadsworth	died	1737
1737	Rev. Edward Holyohe	died	1769
1770	Rev. Samuel Locke, S. T. D.	resigned	1773
1774	Rev Samuel Langdon, S. T. D.	resigned	1780
1781	Rev. Joseph Willard, S. T. D. LL. D.	died	1804
1804	Rev. Samuel Webber, D. D.	died	1810
	Rev. Thomas Kirkland, D. D.		

The course of studies pursued in all the grammar-schools of Massachusetts is directed to the preparation of students for Harvard University. Of such schools there are many in Boston; and not only is every township containing two hundred householders obliged by law to support one,---but there are few English schools in the state, in which the preparatory education cannot be acquired.

A college was founded, in Rhode Island, in 1764; and was afterwards called Brown University, from Nicholas Brown, Esq. who made it a donation of $5000. It was first located at Warren,---but was afterwards transferred to Providence. It has, at present, a good philosophical apparatus,---and a library of about 3000 volumes. There are professorships of law---of the oriental languages---of logic and moral philosophy---of anatomy and surgery---of chymistry and of botany and materia medica. A majority of its corporation are baptists; and the number of its students is not far either way from 100. The list of presidents embraces the Rev. Dr. Manning, the Rev. Jonathan Maxcy, D. D. and the Rev. Asa Messer, S. T. D. LL. D. A law was passed several years ago to support schools at the public charge; but was very soon annulled, in consequence, we believe, of its unpopularity.

So long ago as the year 1654 an attempt was made to found a college in Connecticut; and it was indeed a part of her original constitution to have a connected system of literary institutions from the lowest to the highest.

'Mr. Davenport (says president Stiles in his Judges of King Charles I.—a book with which we shall make our readers more acquainted with in the next number) brought forward the institution of a college, to which the town of New-Haven made a donation of lands and meadows, distinguished to this day by the name of College Land. Upon a donation to this college in New-Haven of perhaps four or five hundred pounds sterling, by governor Hopkins, who died in London 1656, which donation was procured by the correspondence of governor Eaton and Mr. Davenport with Mr. Hopkins, the General Assembly erected the Colony School into a College for teaching 'the three learned languages, Latin, Greek, and Hebrew;' and for 'the education of youth in good literature, to fit them for public service in church and commonwealth;' and settled 40*l.* a year out of the Colony treasury upon the preceptor or rector, besides the salary from New-Haven school, with 100*l.* for a library. Mr. Davenport took the care of the Colony School for several years; until the Trustees, with the Magistrates and Ministers, in 1660, established the Rev. Mr. Peck in it, according to act of the Assembly; who undertook and proceeded in it, teaching the learned languages and the sciences. But the convulsions of the times, the dissolution of the colony in 1664, the discouragements Mr. Peck met with for want of proper support, and the removal of Mr. Davenport from New-Haven to Boston in 1667, broke up the college—and left this well begun literary institution to go out and terminate in a public grammar school, upheld in this town, and holding the Hopkins' funds, and the other endowments of college estate, to this day. Yale College is a different institution, and not at all built upon the foundation of

this first college, which became extinct in 1664, and especially long before 1700, when the present college was founded at Saybrook, and before 1717, when it was removed and settled in New-Haven.'

It acquired the present name from Elihu Yale, Esq., its chief benefactor. The corporation consists of the president, the governor of the state, six of his assistants, together with ten clergymen: it has but four professorships,—one of divinity—one of mathematics and natural philosophy—one of languages and ecclesiastical history—and one of chymistry and mineralogy:* the number of students is generally from two hundred and seventy to three hundred; and the library contains about six thousand volumes. The philosophical and chymical apparatus are complete; and it has in its charge a most brilliant mineralogical cabinet of twenty-four thousand specimens—besides a smaller collection of its own, amounting to about two thousand five hundred more. Education at Yale College has heretofore been too much devoted to the mathematics. Of late years, however, the system has undergone some material alterations; and, if the same spirit of salutary innovation continues, it will not be long before the belles lettres will receive their adequate proportion of study. The Collecteana Græca Minora, as well as the first volume of the Majora, have already been introduced; and one or two new Latin authors also, are now included in their routine of study. Webber's mathematics have formerly been used; but Professor Day is now publishing a new system of his own, which is to supersede the old, in Yale College—and perhaps in Harvard. In other respects, the plan of education in both these seminaries is very nearly the same. Three thousand young men have already been educated at the former; five sixths of whom, our readers will be surprised to learn, belonged to the single state of Connecticut. The theological doctrines of Yale College are Calvinistic,—those of Harvard are Arian; and accordingly such parents in either Connecticut or Massachusetts, as feel pretty scrupulous upon religious matters, are in the habit of sending their sons to which ever institution agrees best with their respective notions of orthodoxy. Never did any institution struggle its way into celebrity against so many pecuniary disadvantages as Yale College; for, though the legislature

* A medical institution has lately been attached to the college; so that the professorships are now a little altered from their former arrangement. There are six,—one of materia medica and botany; one of the theory and practice of physic, surgery and obstetricks; one of mathematics and natural philosophy; one of chymistry, pharmacy and mineralogy; one of languages and ecclesiastical history; and one of anatomy and physiology.

have always appeared to be particularly beneficent (so far as their means would go) to the schools for common education—they have never taken any liberal measures for promoting the interests of the only college of any name in their dominions. The presidents of Yale have been:---

Accessus.		*Exitus.*
1701	Rev. Abraham Pierson,	1707.
1719	Rev. Timothy Cutler, S. T. D.	1722.
1726	Rev. Elisha Williams,	1739.
1739	Rev. Thomas Clap,	1766.
1766	Rev. Napthali Daggett, S. T. D.	1777.
1777	Rev. Ezra Stiles, S. T. D. LL. D.	1795.
1795	Rev. Timothy Dwight, S. T. D. LL. D.	1817.
1817	Rev. Samuel Davis.	

In the year 1769, a college was founded in Hanover, New-Hampshire,---called Dartmouth College, from the earl of Dartmouth, who was one of its chief benefactors. It is under the direction of a president and three professors,---one of civil and ecclesiastical history; one of mathematics and natural philosophy; and one of languages. The number of students is about one hundred and seventy,---besides about sixty in the grammar school, and about the same number in the medical department. There is a good philosophical and chymical apparatus; and a library of about four thousand volumes. The funds of the institution consist in eighty thousand acres of land; yielding an annual revenue of nearly $1340; which, with the tuition money make an income of about $3000. It has had but two presidents---the Rev. Eleazar Wheelock, accessus 1769, exitus 1779; and the honourable John Wheelock, accessus 1779, exitus 1816.

In 1791, a college was established in Burlington, Vermont. At first a donation of $6000 for the erection of buildings and for the establishment of funds, was all the aid it received; but since that period, the legislature have granted it lands to the amount of about thirty thousand acres,---which, as they daily increase in value, must, before long, be productive of a very considerable revenue. But whatever be its revenue, it will always be prevented from gaining any great celebrity, in consequence of the juxtaposition of Middlebury College; an institution which was founded in 1800; and which, though dependent for support upon private bounty alone, is in quite a flourishing condition, and has in general about one hundred and twenty students. The Rev. Dr. Austin, and the Rev. Dr. Jeremiah Atwater, have been the only presidents of Burlington and Middlebury Colleges respectively. Many years ago, the legislature of Vermont reserved thirty-three thousand acres of land for the

support of an university; and they are now taking measures for its establishment at Montpelier,---the present seat of government. Academies in almost every county,--and grammar schools in every county, have been established by law, and are supported at the public charge.

The college established at Brunswick, in the District of Maine, in 1795, received its present name from the honourable James Bowdoin, who gave the institution $10,000, and bequeathed it his own library. The state has made it a donation of five townships; which will, in time, produce a considerable revenue. The presidents have been, the Rev. Mr. Brattle, and the Rev. Dr. Appleton; and the present number of students is not far from sixty. There are seven academies in the district,---all endowed with liberal grants of land.

King's (now Columbia) College, was founded in New-York, in the year 1754.* It has at present two faculties,---one of the arts, and one of physic. The funds yield a revenue of $3850; and though the number of students is by no means great, the institution is said to be in a flourishing condition. Its presidents have been the Rev. Samuel Johnson, D. D.; the Rev. Benjamin Moore, D. D.; the Rev. William Harris, D. D.; and the Rev. John Mason, D. D. In 1794, the regents of the university, as they are called---a sort of committee, instituted since the revolution, for the management of literary matters,---incorporated Union College, in Schenectady. In 1796, its funds were upwards of $42,000, besides one thousand, six hundred and four acres of land; and the legislature have since granted it a lottery of $90,000. It is under the direction of a president, and three professors,---one of mathematics and natural philosophy, and one of each of the dead languages. The Rev. Dr. John Blair Smith, was its first president; the Rev. Jonathan Maxcy, the second; and the Rev. Dr. Eliphalet Nott, the third. Hamilton College was lately established in the western part of the state; and had just begun to be flourishing,---when it received a severe blow in the death of its president, the Rev. Dr. Backus.

About the year 1738, John Hamilton, Esq. the president of the Council of New-Jersey, granted the charter of Princeton College. It was nine years afterwards enlarged by Governor Belcher; and has since undergone no very material alterations. The

* This was a late beginning; and the historian of the state speaks in the following terms of her early literature: ' Their schools (says he) were in the lowest order; the instructors wanted instruction, and through a long and shameful neglect of all the arts and sciences, their common speech was extremely corrupt, and the evidences of a bad taste, both as to thought and language, were visible in all their proceedings, both public and private.'

corporation is composed of twenty-four persons; of whom the governor of the state and the president of the institution are, *ex officio*, two. Besides the president, there are three professors: the number of students is about one hundred and thirty: the number of volumes in the library is about three hundred; and the amount of its revenue not far from $3,000. An excellent philosophical apparatus, together with the library, was destroyed by the British, during the Revolution. The library was burned a second time in 1802. Nassau Hall,---situated as it is, upon the highest ground betwixt the Delaware river at Trenton, and the Rariton at Brunswick,---cannot help being a healthy place. The presidents have been :---

Accessus.		*Exitus.*
1746	Rev. Jonathan Dickenson,	1747.
1748	Rev. Aaron Burr,	1757.
1758	Rev. Jonathan Edwards,	1758.
1758	Rev. Samuel Davis,	1760.
1761	Rev. Samuel Fenley, D. D.	1766.
1767	Rev. John Witherspoon, D. D.	1794.
1794	Rev. Samuel Stanhope Smith, D. D.	1812.
1812	Rev. Ashbel Green, D. D.	

In the year 1770, the ministers of the Dutch church appropriated about $1200 to the establishment of a college at New-Brunswick; which as it has always been devoted to the interests of that denomination, was lately converted into a purely theological seminary. It has a board of twenty-nine trustees; a president; a vice-president; and one professor. The students are, for the most part, the children of Dutch emigrants. The library is small,---but well selected; and the whole machinery of the school (the Rev. Dr. Livingston now presides) is under very good regulation.

There are six colleges in Pennsylvania;---Dickenson College, at Carlisle; the University of Pennsylvania, in Philadelphia; Franklin College, at Lancaster; Jefferson College, at Cononsburg; Washington College, seven miles from the same place; and Alleghany College, at Meadville. Dickenson College has an excellent central position. It is under the direction of forty trustees; has a principal and five professors; a good philosophical apparatus; a library of about three thousand volumes; and a revenue of considerable amount, arising from ten thousand acres of land, and $10,666 in funded certificates. It has had three presidents,---the Rev. John Nesbit, D. D.; the Rev. Dr. Davidson; and the Rev. Jeremiah Atwater, D. D. The present University of Pennsylvania resulted from the incorporation (1791) of the old institution of that name, with the college, academy, and charitable schools of Philadelphia. It is di-

vided into three departments,---the college, the medical, and the grammar schools; in all of which there are about six hundred and fifty students,---about fifty in the first, five hundred in the second, and one hundred in the last. Its funds are not so extensive as they ought to be; yielding a revenue of only about 2365*l.*; but, in other respects, it is on a very good footing; and the philosophical apparatus, particularly, is, without a doubt, the most complete in the United States. The list of presidents comprises, the Rev. William Smith, D. D.; the Rev. John Ewing, D. D.; John Mc Dowell, LL. D.; the Rev. John Andrews, D. D.; and the Rev. Frederick Beazley, D. D. Washington and Jefferson Colleges are in the neighbourhood of each other; and are very much alike in every particular. The funds of the former are small;—but it has a pretty good library and philosophical apparatus. Dr. John Macmillan, was its founder; and the Rev. John Watson, the Rev. James Dunlap, and the Rev. Andrew Wylie, comprise the list of its presidents. Washington college has funds to the amount of $20,000; and is now under the presidency of the Rev. Mathew Brown. In each of these colleges the average number of students is about sixty.

At Athens, in Ohio, a college has lately been established, with landed funds which already yield a revenue of $30,000; and which are every day growing more and more productive. Its president is the Rev. Mr. Lindly, an alumnus of Jefferson College; who already enjoys the satisfaction of having under him about ninety pupils.

In 1782, Washington College was established at Chestertown, in Maryland. It was at first empowered to hold property yielding 6,000*l.* a year, and had granted to it two years afterwards, a revenue of 1250*l.*, arising from forfeitures and marriage licenses on the eastern shore. During the same year, too, St. John's College was founded at Annapolis, with the power of holding property worth 9,000*l.* a year, together with a revenue of 1750*l.* arising from forfeitures and marriage licenses on the western. These two institutions constituted the University of Maryland; but neither has ever been well supplied with teachers or with pupils. In 1785, the methodists established a college at Abington, Herford county;—but their building was consumed by fire, we know not in what year precisely. They then built an edifice in Baltimore, and got the institution pretty well a-going,—when their house was burned again; and though some attempts have been made to get up a second phœnix college, the undertaking is now pretty much at an end. There are, besides, two colleges at Baltimore; both of which were chartered,—though neither is supported,—by the state. St. Mary's College was established, under the patronage of the Jesuits, by that extensive

branch of the Roman Catholic church, known by the name of the Society of St. Sulpitius; and, so far as extensive building and extensive advertising would go, no efforts were wanting to render the institution popular. It was enriched by liberal donations from Louisiana, from Canada, and from Europe; and till about 1806, its celebrity continued to increase in every part of the United States. Its subsequent declension has been attributed partly to the military despotism of its government,—partly to the religious jealousy, with which it has been regarded by a great portion of the community,—but chiefly, we believe, to the establishment of a rival institution very near it. The creation of Baltimore College, and the grant not long since made of $25,000 for the support of common schools,—are manifestations of a liberal spirit in the legislature of Maryland. The Revd. Messrs. Duburg and Knox are respectively the presidents of St. Mary's and Baltimore Colleges.

William and Mary College in Williamsburgh, Virginia, was founded in 1691; with a donation from the English sovereign of about 2000*l.* sterling, twenty thousand acres of land, and a penny a pound on certain quantities of tobacco exported from Virginia and Maryland. Besides these funds, the Assembly granted it a duty on imported liquors and exported skins and furs;—so that, altogether, its annual revenue, before the Revolution, amounted to about 3,000*l.* It is under the direction of a president and six professors: it has a complete philosophical apparatus, and quite a large library; but the unsteadiness with which the institution has been managed—the exclusion of classical studies—and the inconvenience of the college edifice, which was only calculated for one hundred students, have contributed to check the progress of its celebrity. In 1787, there were but thirty students,—all of whom were engaged in the study of the civil law. Not long since, however, the legislature made it a liberal donation; and every exertion is now made to fill the chairs with able professors, and to improve the general economy of the college. A Mr. Boyle, of England, made an appropriation of a considerable sum, for the establishment of a professorship, under the title of Brafferton Lecture; the object of which was to instruct and christianise the Indians. It never has done much good.—Hamden Sidney College was founded soon after the war. Its funds have always been small; the number of students never greater than sixty; and the institution has now become a school of theology, under the direction of Dr. Hoge, aided by the General Assembly of the Presbyterian Church.—Washington College, at Lexington, originated in the exertions of the Rev. Mr. Graham---who, at first, carried his views no farther than to erect an academy for theo-

logical education;---but he succeeded so well in this attempt that the legislature gave him a collegiate charter and very respectable endowments. Washington, too, bestowed upon it, a short time before his death, one hundred shares in the James River Company, which were worth about 7,000*l.*, and a part of which has been appropriated to the erection of buildings, and the purchase of philosophical apparatus. The college is very pleasantly situated;---but its number of students has seldom exceeded sixty. The Rev. Mr. Baxter succeeded the Rev. Mr. Graham.

Before Kentucky was separated from Virginia, legislative provision had been made for the establishment of a college at Lexington. In 1798, it was re-incorporated---and now goes under the high sounding title of the *Transylvania University;* though, in fact, it is nothing more than a humble grammar school—of about thirty students. It was liberally endowed at first, and its revenue amounts now to $2700. There is a library of not far from fifteen hundred volumes; a philosophical apparatus; and a small, but neat and well arranged edifice. For a long time the institution was under the direction of the Rev. James Blithe,—who has been lately succeeded by the Rev. Robert H. Bishop.

Washington College, in the county of the same name, in Tennessee,—though destitute of funds,—has served to educate a number of youths, in consequence of unusual assiduity in the president, the Rev. Dr. Doak. Greenville College, in Greene county, has some funds; and, under the Rev. Charles Coffin, D. D. has been considered as in a flourishing state. Congress appropriated one hundred thousand acres of land for the endowment of two seminaries,—one in Cumberland, and the other in Knox county; neither of which, however, have ever been so useful as they are rich.

There were no colleges in North Carolina so late as the year 1789; when a university was founded on what is called Chapelhill, in Orange county. Its donations have been pretty liberal; and the legislature made it a loan of five thousand dollars, for the erection of buildings. It has about one hundred students, who are under the direction of a president, (Dr. Maxcy), two professors, and three tutors. South Carolina has outdone its sister. She has chartered five colleges,—one in Charleston, one at Winnsborough, one at Cambridge, one near Beaufort, and one at Columbia;—the three first of which, however, are very little superior to common grammar schools. Beaufort College has a fund of about $70,000; and is in a flourishing condition. It is nothing, however, to South Carolina College, established by the legislature at Columbia, the seat of government, in 1801. This has an income of $6,000—

a building which will hold six hundred students, (its present number is one hundred and fifty,) a good philosophical apparatus---and a library of about three thousand well selected volumes. The legislature of Georgia has made provision for establishing a college at Athens, in Clark county, and an academy in every county,---all united under the name of the University of Georgia.

In the above imperfect sketch, we have purposely avoided giving a particular account of the academies and grammar schools in the United States. The number of these is always in proportion to the number of colleges; and we were unwilling to protract our article with a separate description of them all. We have purposely abstained, also, from drawing the many conclusions which are obviously deducible from the facts we allege,---but which it is as well perhaps, to leave every reader to draw for himself.

ART. IV.--*An Elementary Treatise on Mineralogy and Geology, being an Introduction to the Study of those Sciences, and designed for the Use of Pupils, for Persons attending Lectures on these Subjects, and as a Companion for Travellers in the United States of America. Illustrated by six Plates.* By Parker Cleaveland, Professor of Mathematics and Natural Philosophy, and Lecturer in Chymistry and Mineralogy in Bowdoin College, &c.&c. Boston, 1816. Large 8vo. pp. 668.

PROFESSOR CLEAVELAND'S book, is one of those solid and judicious compilations that increase the mass of useful knowledge among us, and promise to add to the best part of our literary reputation. It deserves therefore to be made extensively known. We shall detail the plan and arrangement he has adopted; afford some specimens of the manner in which he has executed it; and then proceed to such remarks upon the book as may tend to improve a future edition, and to operate in the mean while as cautions respecting some dubious doctrines which the professor appears to adopt implicitly. This is necessary, because, however we may differ from the respectable author of this compilation, we still hope to see it adopted among us as an indispensable part of every mineralogical library; and in the hands of every student. It is extremely gratifying to see this very useful study likely to become fashionable; for the United States will never know the extent of their own resources till they become acquainted with the mineral riches of the country, as well as the vegetables that grow on its surface. In England, as it should appear from the latest novels, the well educated females of that country, have their cabinets and collections; nor indeed can a more beautiful trifle be well imagined than a

well chosen collection of mineralogical specimens of the size commonly put up for that purpose.

The work before us commences with some definitions and preliminary observations, and proceeds to the Properties of Minerals; viz. the characters of their crystals and crystallography—their physical or external characters—and their chymical characters. It then proceeds to the systematic arrangement of minerals into classes, orders, species, and varieties--an examination of the Wernerian arrangement, by physical characters, excluding chymical composition and crystallization—and the arrangement dependent on chymical analysis, with remarks on the utility and imperfections of each mode of arrangement. Thus, whatever may be the intentions or professions of the Wernerian school, it is obvious, that its admirers are compelled to resort to chymistry, and to intermix perpetually,—more especially in the arrangement of ores,—the chymical constituents of the mineral, with its external characters: the same observation applies to the saline minerals; nor is it possible to avoid remarking the awkwardness of that arrangement, which, from dissimilarity of external appearance, will separate minerals so very nearly alike in their constituent parts, as apatite and spargelstein--gypsum and silenite, &c. Indeed one very useful view in which mineralogy may be contemplated, is as the short hand of chymistry. On the other hand, minerals nearly alike in their chymical composition, differ so widely in their external characters, that if chymistry must be depended on as the foundation of mineralogy, no minerals can be named or classed, till three or four good chymists have analyzed them; and even though chymical analysis *may* place them together, they will nevertheless appear to the sight, smell, taste, and feeling, as quite different substances. And why should we not trust our usual senses, as well as the laboratory of a chymist?

These considerations lead on the Professor to the system of the Abbe Hauy.

'It must be obvious (says he) from the preceding observations, that, until the analysis of *earthy* minerals becomes more decisive, some other mode or modes must be employed for determining the species. But, whatever these modes may be, they ought to employ those characters only, which depend on the nature or true composition of minerals. In many cases of crystallized minerals the species may be determined by the form of the integrant particles; for these forms undoubtedly depend on the elementary particles or true composition. It is the adoption and extension of the principles just stated, which constitute the peculiar traits of the system of Mineralogy by the Abbe Hauy. This principle and its application require a more particular illustration.

'In the section on Crystallization (24) we have already defined an integrant particle; and shown in what manner its form may fre-

quently be ascertained by mechanical division (44). It was there remarked, that it is known from observation, that, in a large number of species of minerals, each species has integrant particles of a form peculiar to itself (50). But it must be distinctly noticed, that, in some instances, different species do certainly possess integrant particles of precisely the same form and relative dimensions, although differing in other properties.

'It may, however, undoubtedly be assumed as a universal principle, that every species of minerals has integrant particles, whose true composition is peculiar to that species. In other words, no two really distinct species of minerals can be found, whose integrant particles exhibit the same form and agree in their composition; for, if their forms be the same, their composition and many of their physical properties will differ.

'It hence appears, that an integrant particle in the mineral kingdom corresponds to an individual among animals, or vegetables. As each plant, abstracted from its individual qualities, is a representative of all the plants, belonging to the same species, and of the species itself, so an integrant particle represents the species, to which it belongs. The integrant particles of the same species possess the same composition, the same form and other physical properties; and an aggregate of these particles, whether it be crystallized or amorphous,would exhibit the mineral in a pure state, and possessing all the essential properties, which belong to that species.

'We therefore conclude, that, in cases, where the results of chymical analysis are not satisfactory, the form and some other physical properties, which are essential to the integrant particles, may furnish us with specific characters, on which very great reliance may be placed in determining that composition, which characterizes the species. Indeed the history of the Arragonite justifies us in saying, that such irreconcilable differences of *structure* and other important properties may exist between two minerals, whose composition, in the present state of analysis, appears to be the same, as to render it proper to suspend a decision in regard to such minerals.

'The preceding view of the *nature*, or properties of the integrant particle does not, perhaps, differ from that, given by the Abbe Hauy in his Treatise on Mineralogy. But although he admits, that it belongs to chymical analysis. to establish the basis of arrangement, yet, in determining the species, he appears to be governed *chiefly* by the *form* of the integrant particles, except in those cases, where different species have integrant particles of the same form. Hence he defines a species, *a collection of bodies, whose integrant particles are alike, and composed of the same principles, united in the same porportions.* The latter clause of the definition he adds for the purpose of including those cases, in which integrant particles of different species have the same form.'

To this system of Hauy, Professor Cleaveland objects, that,

'The form of the integrant particle is indeed dependent on the true composition of the mineral, and is unquestionably, in many instances, a very important character to indicate what is essential to that composition. But the acknowledged fact, that some species, really distinct, have integrant particles of precisely the same form, proves that the character, derived from the form of the integrant particle, being less general, ought to be subordinate in the true composition. It is hence obvious, that the form of the integrant particles can never be adopted, as a universal standard, for establishing the species among minerals.

'Further, it is by no means evident, that certain minerals, which have never been seen crystallized, do not constitute really distinct species, and are in fact only a mixture of several species. We have remarked, that every species has integrant particles, whose composition, and very frequently, whose form and some other physical properties, are peculiar to that species, and would, if well understood, distinguish it from every other species. But, would not the integrant particles of a mineral remain the same in their real nature, whether regularly arranged in a crystal, or collected into an amorphous mass? In order that minerals may crystallize, they must be placed in certain circumstances, favourable to this process. Now we find some minerals have crystallized much less frequently than others. And where is the inconsistency in supposing, that some species of minerals seldom or never crystallize? We do not indeed know all the circumstances, under which minerals were placed at the time of their formation; but is it not perfectly consistent to believe, that the presence of certain earths, not essential to the species, may, by their counteracting affinities, prevent crystallization? This we know to be sometimes the case in mixtures of certain salts. It is true, the number of supposed species, which has never been seen crystallized, is indeed small. But, if they are really distinct species, their claims to that rank ought to be asserted, although they have never been permitted to delight our eyes by their regularity of form.'

After this he proceeds to the principles which he has adopted for his own arrangement in the present work; acknowledging genera, orders, classes, species, subspecies, varieties, and subvarieties.

'It may be useful here to recapitulate the principles, we have endeavoured to establish for a scientific arrangement of minerals, and to make some additional remarks on the subject.

'1. The true composition of minerals is the only sure criterion for determining the species, and when known, should be employed in all cases.

'2. When the composition of minerals is entirely unknown, or but imperfectly understood, other characters, depending more or less on the composition, must be employed. Of these the more

important are undoubtedly derived from the crystalline *form* and *structure;* the latter of which may be extended to foliated masses, not possessed of a regular form; for these often easily yield to mechanical division. Indeed a careful attention to crystalline characters may sometimes remove apparent difficulties in the results of analysis.'

'3. The form of the integrant particle may often be employed with great advantage; but this alone cannot be relied upon with certainty, because the same form is sometimes common to different species; and hence, if two minerals are found to have integrant particles of the same form, the other properties of these minerals, examined in a state of purity, must agree, in order to establish the identity of the two substances.'

'4. When minerals, whose ingredients are capable of combining in various proportions, are crystallized, the form of the integrant particle may be of great use in limiting the species.'

'5. The form of the integrant particle, and the primitive form of crystals may be employed with advantage to distinguish what ingredients, found in a mineral, are unessential to the species; for whatever can be added to a mineral, or taken from it, without affecting these forms, may be considered foreign or not essential. The siliceous carbonate of lime (calcareous sandstone of Fontainbleau) affords a striking instance of a mineral greatly contaminated by a foreign substance, without affecting the form of the integrant particle.'

'6. When analysis is wanting, much benefit may be obtained from the primitive forms of crystals in establishing the species; for it is worthy of notice, that, when two or more crystals, belonging to different species, have the same primitive form, their other physical characters are, in general, strikingly different; as in the case of spinelle and magnetic oxide of iron. Indeed the primitive form may, in many instances, be employed instead of that of the integrant particles.'

'7. The structure and actual forms of secondary crystals are also important, provided the various angles of the crystal be accurately measured.'

'8. When all assistance from analysis or the crystalline form is denied, the species must be determined by a well chosen aggregate of those external characters, such as structure, fracture, hardness, &c. which depend most intimately on the nature of the mineral. It is however to be understood, that in all cases, where the composition is unknown, the species are to be considered provisional, till the progress of chymistry shall enable us to re-examine them.'

'The number of species, whose composition is not well known, even if it were greater than it is, ought not to be offered as an objection to the principles, we have just stated, for establishing the species. An objection of this kind would be saying, that, because we

have not sufficient light on every object, it should be rejected in cases, where it shines with the greatest clearness. Neither can any difficulty or confusion arise from adopting a method somewhat mixed, depending in different parts on different principles. For so far, as the method is mixed, it arises from an imperfect knowledge of the true composition of certain minerals; and there is reason to believe, that the provisional species will gradually disappear, either by becoming well established, or by being associated with other species.'

'The preceding principles, it is believed, will enable us to limit and determine every species of simple minerals with as much accuracy, as the present state of our knowledge will permit.'

On the nomenclature and synonime of minerals, the author makes those remarks which every mineralogist is driven to make. It forms, indeed, an obstacle of no common magnitude to the acquirement of mineralogical knowledge; and how the evil is to be remedied by the daily addition of new designations to ancient substances, we know not. It appears to us, that Hauy and his followers have much to answer for on this ground:—they have burthened us with hard names from the Greek Lexicons of Stephens, Hederic, or Schrevelius, which have no affinity whatever to the substances they are meant to designate. To us, this eternal resort to the Greek language—this untimely submission to Horace's rule *si Græco fonte cadant*—appears an attempt to exclude the mass of the people from useful knowledge, by needlessly complicating it with useless learning: it is like denying the cup to the laity: it reminds us of the pedantry of poets and painters, who take it for granted that aman of sense has nothing to do, but to burthen his memory with school-boy recollections of heathen mythology. It inscribes on the porch of mineralogy, procul, o! procul, este profani. The uncouth names of Werner and his disciples; his rock-cork, his rock-milk, his rock-butter, or even goensikoethiges silver; is better than the eurites, the psamenites, the phullades, the telesies, the amphiboles, the pyroxenes, the amphigenes, the zyloides, &c. of the French school.

Perhaps it is yet too early to institute a characteristic nomenclature, until we have fixed the system on which the characters shall be founded. But when we have a name tolerably characteristic,—as the Fish-eye stone for instance,—why need we the apophyllite and the icthyopthalmite into the bargain? Werner has named the scapolite; how much is added to our knowledge when Hauy calls this paranthine, or when some other mineralogist in a complimentary humour, calls it white Wernerite? Is not axe-stone as good as axinite or thummerstone? But pages might be filled with similar observations on similar instances. We are aware of the objection, that the learned should have some common language to supply their nomenclature; but when names are really descriptive, they can easily be translated from one modern into another modern language. No difficulty oc-

curs to a chymist, because what the English call muriat of Soda, the French call muriate de Soude. We wish all useful knowledge to be extended; to be made common; and when a man is earnest in search of the knowledge of things, we greatly object o any system, which shall deter him, by rendering necessary the mere knowledge of words. What is called learning, is very useful; but it ought not to be made absolutely necessary to science; which, as the fashion now is, we lock up in a chest, and appoint a greek professor to keep the key.

But it is time to proceed with the work before us. Professor Cleaveland, from page 87 to page 101, gives us a tabular view of minerals, under the arrangement and nomenclature he has adopted; which is better and more useful than the mineralogical tables generally published in works of this description, from the marginal notices of the substances which enter into the general composition of the minerals so classed. His arrangement is, upon the whole, as good as, if not better than, any precedent one. If we were to make any exception, it should be the chymical classification of Dr. Clarke, of Cambridge, in England.

In his descriptions of particular minerals, our author gives us the usual external characters; *part* of the crystalline characters; the chymical characters when they have been ascertained; their geognostic and geographic situations and localities; with notices of those places within the United States where the respective minerals are to be found. In this respect, he has resorted to, and has been assisted by, able men among us; and it gives his book a decided character of interest, as being more peculiarly the mineralogy of the United States. This circumstance alone, were there no other, would recommend it strongly to American mineralogists. But it has still other recommendations:—it is a laborious, and, upon the whole, a judicious compilation from the best of the foreign mineralogists,—Hauy, Brongniart, and Jameson; and it will go near to supersede the necessity of purchasing the editions he uses of the authors referred to.

We have already remarked that Professor Cleaveland has given his readers part of the crystalline characters. In the preface, p. vii. he observes,—

'But as the limits assigned to this volume would not permit a particular notice of all the secondary forms of crystals, I have endeavoured to give those general views of the *primitive* form and structure of the crystals under each species, which may enable the student to refer the various secondary forms to their proper nucleus. In addition to this, the most common secondary forms, and sometimes those which are most rare, or most complex in their structure, are particularly described, and often explained by the assistance of diagrams. It is extremely important to possess correct general ideas of the form and structure of the *perfect*

crystals of each species, for without such knowledge, it would often be impossible to recognise those forms which are incomplete or irregular in regard to the number and extent of their faces,' &c.

To this plan we object; 1st. That the primitive form cannot be distinguished in more than a dozen cases within the whole compass of mineralogy, without the instruments and skill of a lapidary;—2dly, That the primitive form is not always the same in minerals, usually classed under the same order, genus, and species;—3dly, That the study of Hauy's diagrams and wooden crystals to show how a secondary form may possibly arise from additions, accretions, detractions, and compressions, would be a study of itself, enough to absorb exclusively too large a portion of time, even if *it were true and well-founded*;—but, 4thly, That the growth of crystals, and the forms they assume, are governed by laws of compression and attraction perfectly different from any assigned by Hauy. M. Methuon has shown this, in a way that goes to the utter destruction of the very ground-work of the Abbe's theory. It would be a much lighter task to learn by rote, all the different chrystalline appearances of a mineral as they actually occur in natural situations, than to depend on diagrams, founded on a theory not only unsupported by sufficient facts, but contradicted by the latest observations.

We object to Professor Cleaveland's method in this respect, that the primitive forms of crystals are not of the greatest, but of the least, practical importance to a mineralogist; not merely for the reasons above assigned, from the scarcity of well chrystallized minerals, and the difficulty of arriving at the primitive crystal; but from the reluctance also which a mineralogist would have to sacrifice a fine specimen for the detection of its nucleus, when a chymical analysis of the dust or fragments would be so much more conclusive and satisfactory. Hence, *without rejecting* chrystallization, more than any other feature in the physiognomy of a mineral,—well knowing how often it aids in determining the character,—we are not inclined to lay so much stress as our author does, upon the real or supposed *primitive* chrystal. It cannot, besides, be applied to one specimen in five hundred of actual collections; which, unless collected by some disciple of Hauy or Bournon, with an express view to the science of crystallography, consist at least in that proportion of minerals amorphous or imperfectly crystallized. Neither is this attention to the primitive form of a crystal likely to be paid in practice. We want to discover in a country we are exploring, gypsum, or limestone. We are told, that the primitive form of gypsum is a foursided prism, whose bases are parallelograms with angles of 113 deg. 8 min.

and 66 deg. 52 min., the sides of the base and the height of the prism as the numbers 12, 13, 32. Of limestone we are told, that it is a rhomb with two acute angles, 78 deg. 28 min.; and two obtuse angles, 101 deg. 32 min. The faces of this rhomb are inclined to each other at right angles of 75 degrees 31 minutes, and 104 degrees 42 minutes. Let any practical man apply these measurements to the *usual varieties* of plaister of paris and limestone; and say whether they can aid him in any manner, to detect the object of his pursuit? Will not a drop of acid and the thumb nail answer the purpose quicker and better? This very ingenious, but too theoretical system of Hauy and his followers, reminds us of the playful objections of *Simplicius* to the philosophical theories of *his* day. A man says he, meets another in a lane; and wishes to inquire whether a friend of his has lately passed that way. Must he say, 'Friend, have you met a man lately going down the road?' No; he should address him in the language of philosophy,--'Animal, rational, risible, two-legged, and without feathers, five feet eight inches high, have you lately met, during your peripatetic excursion, another animal, rational, risible, two-legged, and without feathers, six feet high? For practical purposes, a small vial of acid, and a blowpipe, are of far more value than a goniometer, especially in this country; where, we want travelling, exploring mineralogists, rather than closet collectors of rare specimens, and profound crystallognosts. Professor Cleaveland, however, has only followed the authors he has consulted; and, right or wrong, he has the greater number of mineralogists on his side; for the French philosophers, in mineralogy, as in chymistry, have their own school, and their own propagandists. Our objections are more to the system adopted, than to the professor for adopting it.

It would lead us too far to make remarks upon the different minerals the author has described; but a few observations have struck us, here and there, which it may be well to notice in case of future editions.

P. 127. The sulphat of strontian, said to be found near Frankstown, has never been authenticated as to its locality. Dr. Muhlenburg *was told*, it came from there: the locality we suspect is made on his authority; but it has not been confirmed

P. 129. Mr. Farrady and Sir H. Davy, have lately given an account of native lime sent to them from the south of Santa Gonda, near the road to Pisa. Lime 82,42. Silex 10,57. Iron 2,82. Alumina 1,34. Loss 2,86. Ann. of Philos.

P. 172. Magnesian limestone, is said on the authority of Smiths on Tenant, to be injurious to vegetation when calcined. Later experiments in England, and in Pennsylvania, have

shown, that its injurious properties were rather to be ascribed to the quantity used, than to the quality of the lime. It cannot be used so freely as the common lime. Almost all primitive lime stones, keeping company with magnesian rocks, contain magnesia.

The article, Basalt, p 278, is drawn up with great care; but it seems to us strange to say, that this mineral is never crystallized! Is not all calumnar basalt crystallized? Is there more anomaly in the sides of a crystallized column of basalt, than in a crystal of carbonat of lime? What definition of crystallization will exclude either the prismatic column, or its articulations? Basalt is said to be usually incumbent on other rocks, as granite, gneiss, mica, slate, &c. We apprehend that it seldom covers *immediately* primitive formations; and if the floetz trap should be basaltic, as the French and Italian mineralogists contend with great appearance of reason, it is often the exterior covering of very recent formations. The author before us says, that basalt probably never rests upon lava. The question is not settled whether basalt be not a lava.

P. 286. 'Basalt sometimes contains organic remains, both of animals and vegetables.' This assertion will be true or untrue, according to the substance called basalt. In the argument where it is placed, it amounts to a *petitio principii;* for it is not yet settled that the secondary trap of the Wernerians is not a basalt. 'The analysis of basalt shows it contains water, which lavas do not.' Now as lavas, like basalt, contain pyroxene, idocrase, leucite, titanite, zeolyte, &c. they certainly contain water with respect to these crystallized substances. We do not, at present, recollect the comparative analysis of basalt and lava, on which this assertion is founded; for to prove it, the experiments should be purposely made. Many other remarks occur on this interesting view taken by Professor Cleaveland, of the probable origin of basalt, whether neptunian or plutonian. He inclines to the former; or rather, adopts the neptunian origin of this substance. But he does not mention two facts that appear to us decidedly to overthrow the neptunian theory: 1. That whenever basalt cuts through a coal formation, or forms a dyke in it, the coal immediately contiguous, is actually burnt—decomposed by fire. 2. Cordier has lately shown, that when coarsely powdered, the fragments of basalt are precisely similar to those of lava; that in short, the one cannot be distinguished from the other; the same substances being found in both.

P. 330. Amianthoide. The termination *oid* is so very indistinct, that its use is greatly objectionable. What is amianthoide? Something *like unto* amianth. We suspect this to be the sub-

stance found in the gneiss at the end of the Schuylkill canal near Philadelphia.

P. 333. Coccolite. The substance so called from Lake Champlain, is so very different from the common coccolite of Europe, that it must be analyzed before it can be classed. It is not sufficient that it is in granular concretions;—there must be some chymical relationship. The coccolite of Lake Champlain is much more like garnet; judging from its appearance merely. The term coccolite is not characteristic; as a vast variety of minerals are found in granular concretions.

P. 349. A stone extremely similar to the verd antique, has been found near Haddam, in Connecticut; and is an excellent substitute for this beautiful marble. Indeed, many substitutes might be found by exploring serpentine regions. Perhaps the serpentine marble of Milford Hills, mentioned by Professor Cleaveland, may be the same with the slabs brought to Philadelphia.

P. 359. 'Argillaceous minerals. These substances never exhibit crystals, nor even possess a crystalline structure.' The hardest and most perfect crystals that are to be found—the diamond excepted,—such as the sapphire, the spinelle, the adamantine spar, the diaspore, &c. are composed chiefly of argillaceous earth.

P. 368. Kaolin: this mineral abounds in the neighbourhood of Philadelphia; fit for all the purposes of the manufacturer of porcelain. So does fine clay, whether for the finer kinds of pottery, or the glass-work crucibles, in various places along the river Delaware, from Burlington to Newcastle.

P. 407. It were to be wished the Professor had not only borrowed from Jameson, the indications of coal strata, but distinguished as Jameson ought to have done, between the smokeless anthracite, and the bituminous coal, which are found in very different geological situations. The former is usually an inhabitant of transition,—the latter of floetz or secondary regions. In Pennsylvania, the coal to the east of the north east branch of the Susquehanna, is in transition country, and is anthracite: the bituminous coal is on the west and to the west of the west branch of Susquehanna; and thence indefinitely down the Ohio and on its stream, in the great Mississippi basin.

P. 411. 'Coal has been used with success in baking stoneware, but neither coal nor coke has hitherto been employed in baking porcelain.—Brongniart.' This is a mistake; it is commonly so employed in England.

Pp. 504, 505. Earthy phosphat of iron: green iron earth. The blue and green iron earth of the Jerseys, does not appear to be a phosphat of iron; for on being dissolved in nitric acid, neither nitrat or acetat of lead, produce a phosphat of lead.

These earths appear to be hydrats of iron merely. The crystallized green iron earth of that state, is a beautiful mineral.

P. 508. Chromated iron. Add, about a mile from the Fox Chace, on the old Chester road, fourteen miles from Philadelphia, and on the tract called Soldier's Delight, at the back of Roysterstown, about fourteen miles from Baltimore.

These remarks on the minerals described, might be greatly extended; but more on the subject would be out of place here; and we proceed, therefore, to the last part of Professor Cleaveland's work,—his introduction to the study of geology.

In this part, he presents the reader, in a plain and summary, but clear and condensed manner, with the general facts ascertained by geologists. He gives us, *first*, his own arrangement of rocks into primitive and secondary; and, *then*, Werner's arrangement into primitive, transition, and floetz, or secondary. He furnishes us, also, with a brief view of the Wernerian, or Neptunian, and of the Huttonian, or Plutonian, theory of the causes that have produced the actual arrangement and phenomena;—the general facts relating to the history of veins;—the Wernerian arrangement of rocks; and a description of them according to that arrangement. All this is neatly and concisely done. The great objection to it, is, that it is too concise; though if considered as a mere appendix to a treatise on mineralogy, it is perhaps long enough. What *is* done in this respect by Professor Cleaveland, is done *well;* and it may not be impossible that this circumstance induces us to wish it were more extended. In some parts, indeed, we do not altogether coincide with him; but we have no pretensions to assert, that the mistake is on his side. In the arrangement of rocks, for instance, the Professor, with the French geologists, seems to reject the transition class; though the psammites of the French geognosts are really transition rocks. Werner, who has applied his very accurate observations on the Hartz mountains to the globe of the earth, has perhaps unnecessarily burthened the valuable information he has presented to us, with names that imply a theory such as transition. But the distinction he means to insist on by this name, certainly exists in nature.

Are there not two great classes of rocks,—one, whose leading character is, that the rocks comprised in it, are distinctly inclined—another, whose character is, that they are comparatively, level and horizontal; floated, floetz? These are facts, involving no theory. The primitive and transition of Werner, will be included in the first class—the secondary in the other. But it is undeniable, that among the inclined rocks, the more recent are manifestly formed of the debris of those that preceded. These are Werner's transition rocks. As to the two

theories, neither will suffice alone. The neptunian is utterly inadequate to explain the phenomena of basalt; nor can a vulcanist account for the appearance of an hydrophane.—We need both explanations. Those geologists who have travelled in the north of Europe, are generally neptunians; those who have made their observations in the south of the same regions, are generally vulcanists. We strongly incline to think that the floetz trap of Werner, will turn out to be basaltic, and owe its origin to fire. It would be very desirable (by the bye) to reject this unmeaning word from mineralogical language; or else to employ it adjectively; for it is applicable to every rock which, in its strata or layers, forms steps; and it is very seldom applicable to the hornblende rocks, to which the Wernerian mineralogists apply it. Indeed the rocks called trap by the Swedes, and those so called by the Germans, are strangely intermingled and confused.

In page 637, Professor Cleaveland gives some remarks on the geology of the United States; chiefly taken from the map and memoir of Mr. Maclure, printed in the American Philosophical Transactions, and in Rozier's Journal. Of this map and memoir, Mr. Maclure is about to give a new edition. It is indeed the *only* account we yet have of the mineralogy or rather the geology of this part of America; and it is composed by a gentleman who is perhaps the most travelled, the most experienced, and probably the best informed geologist now living. Those who have conversed much with Mr. Maclure know this; and it is a duty he owes to society to furnish more public proofs of it. The remarks of a man who has travelled with a particular view to mineralogy and geology, over every part of Europe, as well as our own country, and who has spent twenty years in the examination, not of systems, but of nature; not of mountains like the Hartz, the Vosgeberge, or the Alps,---but of the European chains of mountains in all their connexions; not in his study, but on the spot—have a perceptible character of truth, of raciness, of distinctness, that no closet speculation can arrive at. To the knowledge and liberality of Mr. Maclure and Colonel Gibbs, the mineralogy of America is deeply indebted. To the munificence of Colonel Gibbs, the students in the eastern states owe every thing in this respect. We close our observations on Professor Cleaveland's work, with observing—1st. That it is greatly to be lamented he did not wait a short time longer, to take advantage of the late very improved edition of Professor Jameson's mineralogy, in three volumes, greatly enlarged from the former edition used by Professor Cleaveland. Had he done so, the book now under re-

view, would have rendered unnecessary, any foreign publication on the subject; but it certainly does not in its present state, supply the want of Jameson's last work. 2. The foreign journals of France and England for this year and a half, contain valuable matter which might have been worth inserting. But we get these works so late in this country, that in all probability, the professor had not the opportunity of seeing them in time. We would take the liberty of suggesting, however, that it would be useful if he were to keep collecting matter to be published three or four years hence, as a supplement to the present volume:—to which we sincerely wish success; and believe it well deserves to succeed.

ART. V.—*An authentic Narrative of the Loss of the brig* Commerce, *wrecked on the western Coast of Africa, in the month of August,* 1815. *With an Account of the Sufferings of the surviving Officers and Crew, who were enslaved by the wandering Arabs on the Great African Desert, or Zahahrah; and Observations, historical, geographical,* &c. *made during the Travels of the Author, while a Slave to the Arabs, and in the Empire of Morocco.* By James Riley, late master and supercargo. Preceded by a Brief Sketch of the Author's Life; and concluded by a Description of the famous city of Tombuctoo, on the river Niger, and of another large city, far south of it, on the same river, called Wassanah; narrated to the Author at Mogadore, by Sidi Hamet, the Arabian merchant. With an Arabic and English Vocabulary. Illustrated and embellished with ten handsome copperplate Engravings. New York. 1817. 8vo. pp. 551.

A BOOK of extraordinary adventures, among a strange people, and in an unknown land, cannot fail to be read with very peculiar interest. We are all so impatient to get into the secrets of nature,—to have a look at new things, or at new continuations of old ones,—and to relieve the monotony of a life at home, by seeing how other people live abroad,—that whenever we light upon a book that enables us to do so, we seldom take off our eyes till we have read to THE END. Such a book is Captain Riley's Narrative. It is a circumstantial detail of adventures and sufferings, in a land which a foreigner can only be forced to visit,—but about which the whole civilized world have long been striving to learn something authentic. It is written in a plain, unambitious manner,—much better, indeed, than the pursuits of the author would naturally lead one to expect: and the performance is every where characterized by that good sense and good faith which effectually secures our confidence in the writer, and impresses a stamp of authen-

ticity on the book. Before we proceed to justify this opinion by a review of its contents—we ought to state, that, by holding a conversation or two with Captain Riley, we have been enabled to supply a few deficiencies of narration, and to correct some little inaccuracies of chronology and of geography—which, as he kept no journal, were the inevitable results of distant recollection. We shall, first, give a sketch of the author's own travels upon the Zahahrah;—and, then, proceed to those of Sidi Hamet, his master, into the interior of Africa.

On the 6th of May, 1815, Captain Riley sailed from Hartford, Connecticut, in the brig Commerce, with a crew of eight men; and, after no very disastrous voyage, he arrived at New Orleans, his place of destination, on the 1st day of the following June. Here he made some necessary changes in his cargo and crew; sailed again on the 24th of the same month; and landed at Gibraltar, on the 9th of the ensuing August. Here he turned his tobacco and flour into brandy and wines, and about 2000 dollars in silver; took on board an old man, by the name of Antonio Michel; and on the 23d of the month, set sail again for the Cape de Verd islands; where he was going to complete his lading with salt. Early on the 24th he passed cape Spartel; and steered off W.S.W. for the Canary Islands. The weather became so foggy, however, that he could not make the necessary observations for ascertaining the ship's place until the 28th; when he found himself considerably south of the Canaries, and north of the equator, 27 deg. 30 min. Towards evening the ship's course was changed to S.W.—a direction which, the Captain conjectured, would lead him to the easternmost of the Cape de Verds. At nine o'clock P.M. he ascertained that, according to the log, they were only about 30 miles north of Cape Bagador; and it was resolved to steer to the northwest at ten. Just as the helm was *put to port*, however, the crew were alarmed by the roaring of *breakers:* every exertion was made to get the vessel about; but she immediately struck; and, though the anchors were all thrown out, the surges very easily drove her towards the shore. The small boat was immediately got in, and the long boat hung in tackle. Five or six barrels of water, five or six of wine, three of bread, with about as many of salted provisions, were at length secured; and, as the vessel was now almost filled with water, the captain attached a rope to the small boat, and, along with Porter, one of the seamen, was let into the sea on the leeward side, where the violence of the waves was considerably broken. But no sooner had they shoved off, than the boat was overwhelmed with the surf; the captain and the seaman both plunged into the water; and all three very soon thrown together upon the shore. After taking a little breath,

and disgorging the sea water, they carried their boat-rope to the leeward of the vessel, and made it fast to some handspikes which had drifted on shore, and which they contrived to drive into the sand. A hawser was then attached to the other end; drawn on shore, and fastened in the same way. Two of the crew undertook to guide the long boat with the water and provisions; but she was wrenched from their hands and broken in pieces upon the beach. Three barrels of bread, however, along with two of salted provisions were brought on shore; and, about daylight on the 29th, the remainder of the crew conveyed themselves to land by means of the hawser.

They got on shore a compass, and some other naval instruments; which, with the provision and water, were carried up the beach about fifty yards, and placed under a tent, which the captain had contrived to erect by means of some oars and two steering sails. He was in hopes of being able to refit his boats; and, by taking advantage of a smooth sea, either to reach one of the Cape de Verds, or to fall in with some friendly vessel. While the crew were employed for this purpose, a human being of about five feet seven inches in height,—with a complexion between an Indian and a Negro—a head of hair resembling a sailor's *pitch-mop;* a pair of red and fiery eyes; and a beard depending to the breast---was seen at a little distance approaching the articles of the ship, which lay scattered for a mile along the beach. He was soon joined by two old women, and five or six children, as hideous as himself; and they all very soon began to break open and plunder the trunks and chests and boxes which they came within reach of. As cloth was the article which they wanted most, they emptied the beds of their contents; and amused themselves with seeing the feathers borne before the winds. The crew were for getting rid of those visitors by force of arms; but the captain reasoned like the fox in the swarm of flies; and it was soon discovered, too, that, while the natives had learned to run like the wind over the sand, those who had not been accustomed to such *terra infirma* could make scarcely any head-way at all. As a last resource, therefore, the greater part of the crew broached a cask of wine, and got drunk; leaving the captain, Mr. Savage, the second mate, Horace, the cabin-boy, and Porter, one of the seamen, to patch up, as well as they could, the pieces of the long boat. As the wind went down a little in the afternoon, Porter was enabled to gain the wreck, and bring back to shore a few nails and a marlinespike; with which they at length succeeded in putting the crazy thing together. During the night, although a watch was kept up about the tent, the natives contrived to get away one of the sails; and early in the morning, the above-

mentioned old man again made his appearance; balancing in his hand a twelve-feet spear with an iron head,—and accompanied by his two old women, and two young men. He pointed first to the wreck, and then to a drove of camels that were advancing from the east: the women began to yell, and throw the sand into the air; and it was pretty unequivocal, that a retreat on board of the brig was the only way in which our castaways could preserve their lives. The captain ran to the beach for a spar; and, at the same time, the old man came like a fury to the tent; pricked one or two of the men, and frighted them from their property. The small boat was dragged into the water; but the crew huddled into her so eagerly that she immediately sunk and bilged; while the captain, in the meantime, was parrying the old man's thrusts, and keeping him at a distance. They now attempted to escape, first to the east and then to the west: but the old man intercepted them in both directions: the camels were not far off; and the poor fellows were driven, at last, to the necessity of trying their fortune in the long boat. She took in water so rapidly, that by the time they had reached the brig she was about half filled.

The natives seized on all the cloth and provisions; stove in the heads of all the water and wine casks; and made a bonfire of the trunks, sea instruments, books, and charts. All at once, too, they became very hospitable; made signs to the captain that they would do him no wrong; and, to make their professions seem sincere, they carried all their arms over the sand hills. When they found this would not do, they placed a goat-skin of water on the beach; and, retiring to a considerable distance, invited some of the crew to come and take it. The captain, at last, concluded to hazard the experiment; and was not indeed, molested in any way while he went on shore and returned. The old man next signified his disposition to go on board of the wreck; and persuaded the captain to come and stay on shore as a hostage for his safe return. When the captain took his seat on the beach, the natives made every possible expression of friendship;—interlaced their own fingers with his; put his hat on their heads and returned it again; stroked down his trowsers; felt of his head and hands; and, last of all, investigated his shoes and his pockets—which we take to be a marvellous sign of brotherly love. He had neglected, before he left the brig, to guard his crew against suffering the old man to return until he should himself be released; and he found it impossible to make them take his meaning from the shore. Accordingly, after the old man had satisfied his curiosity, and found there were no fire-arms or money on board, he disembarked for the shore. When he was near the land, the

captain rose to meet him,—but was instantly seized by two young men who were by his side. His new friends immediately assumed their wonted malignity of expression; gnashed their teeth at him; and stuck their daggers within an inch of every part of his body; while the old man seized him by the hair, snatched up a sharp scimitar, and—'drew it lightly across the collar of his shirt.' The captain understood him; and accordingly made signs to his crew, that they should put into a bucket all the money there was on board, and have it brought on shore by means of the hawser; adding, at the same time,—what none of them comprehended,—that it should not be put in possession of the natives till he was effectually set free.

The old man counted out the money into three heaps; one for himself, one for the two old women, and the other for the two young men. When the distribution was completed, the whole family rose; and guarding their prisoner with suspended daggers, began to take their way very leisurely for the interior. In order to have one more opportunity of escape, the captain made them understand, that there was still some money on board of the brig. They wheeled immediately; and, coming within a hundred yards of the beach, made him sit down, and bid him to have the said money brought on shore. He had got an idea, that his escape depended upon the disembarkation of Antonio Michel; and, after a little negotiation, the poor old fellow was persuaded to go on shore. The natives immediately surrounded him; stripped off his clothes, pricked him with their knives, and beat him with their fists. The captain told him to make his tormentors understand, that there was money buried near the tent;—and indeed about $400 had actually been embowelled there. They immediately hastened to the spot; and had not been digging long before their hopes were realized in the sight of the wished-for treasure. The noise occasioned by the discovery, drew off, for a moment, the attention of the two who had remained to guard the captain:---he seized this opportunity; got a little the start; and before they could overtake him---plunged into the sea. The old man rushed in after him; but the captain swam under water till he was nearly out of reach; and after 'almost superhuman exertion,' (as he says), was fortunate enough to gain the lee of the brig. He was taken in completely exhausted; and recovered just in time to see the natives dragging across the sandhills the lifeless trunk of poor Antonio.

He was now resolved to try the sea, in the long boat---as leaky and crazy as she was. The jib and mainsail of the small boat were transferred to her. By diving into the hold, the captain found water enough to fill a four-gallon cask. A few

pounds of salted pork, and about four pounds of figs were secured; and with the rest of the cargo there was 'a live pig, weighing about twenty pounds, which had escaped to the shore when the vessel struck, and which swam back again when they were driven from the shore.' The captain put up a prayer to his Creator; and tells us, that, when the boat was shoved off, 'the dreadful surges that were nearly bursting upon them, suddenly subsided, making a path for her about twenty yards wide, and a mile long, through which they rowed her as smoothly as if she had been on a river in a calm, whilst on each side of them, and not more than ten yards distant, the surf continued to break twenty feet high, and with unabated fury.' The dangers and sufferings which they encountered in this desperate undertaking, we cannot find room to particularize. They started on the 29th of August:—on the 31st, they were obliged to kill their famished pig, for the sake of something fresh; on the 1st of September, they were reduced to the necessity of only wetting their mouths twice a day with water, and as many times with urine; they concluded to put about on the 2d; descried the coast again on the 7th; and, though the shore was composed of high, overhanging cliffs, which the sea dashed against with perpetual violence, they were determined to hazard a landing. They accordingly approached a small spot, which appeared like a shelf of sand; 'and were carried (says the author) on the top of a tremendous wave, so as to be high and dry, when the surf retired, on a little piece of sand beach, just large enough for the boat to lie on.' They carried up the rocks, what little water and pork there was left; and after helping to finish the last bottle of wine, the captain and Mr. Savage endeavoured to ascend the cliffs in order to discover where they were. Finding no access to the summit, however, they returned to their companions; and, along with them, ate a little pork, tasted of a little water, laid down to rest, and, 'notwithstanding their dreadful situation, slept soundly till day-light.' The shore, which was five hundred feet high, ran from E. N. E. to W. S. W., and the place where our sufferers landed, was afterwards ascertained to be at no great distance from Cape Blanco.

On the morning of the 8th, they divided their water into seperate bottles; each took a portion of the pork; and, with an agreement to keep together and to assist each other, they all set out eastwardly, in order to discover some place where the top of the rocks might be accessible. A dreadful journey lay before them. They were sometimes obliged to ascend craggy rocks, between two and three hundred feet high, and let themselves down again from precipice to precipice: now and then they could only get by a projecting cliff, by taking advantage of

the retiring serge; and at one place particularly, they were necessitated ' to climb along a narrow ledge, between forty and fifty feet high, and not more than eight inches broad.' The sun beat most intolerably upon their backs; and, as their shoes were soon worn off, they drew blood upon themselves at almost every step. To increase the calamities of the captain, in particular, he broke his bottle in climbing over a rock; and ' his tongue, cleaving to the roof of his mouth, was as useless as a dry stick, until he loosened it by'---what we think it is enough to have mentioned once. In this way they got over four miles, in about four times as many hours; slept soundly all night; and on the morning of the 9th, awoke again to a renewal of their sufferings. They had not journied far before they discovered, at no great distance, a sand beach, which, by its slope, appeared to open a way into the interior. Hope spurred them forward; and their eyes were so intently fixed upon the beach, that they did not discover, till they were almost against it, a bold promontorial rock, which completely intercepted their passage to the ' happy land.' In looking around for some place to surmount it, the captain discovered, about half way across the point, a rock which had been washed full of holes, and which was alternately overwhelmed and left bare by each successive wave. He took advantage of the retiring sea; swam to the rock; and, grappling in the chinks for his life, suffered the water to break over him; and then, as it receded again, was quick enough to reach the other side. One after another, they all followed his example;—and now thought themselves in a land which they would excuse for not flowing with milk and honey, provided they could only find a stream of fresh water. While the crew were digging along the beach, the captain contrived to make his way up the rocks, in hopes of finding some green thing to allay their thirst, or some tree to shelter them from the sun. He gained the summit; and lo! a barren plain, extending every way as far as the eye could reach, and unrelieved by a tree, or a shrub, or even a blade of grass. *Despair* is a great deal too weak a word to use here:—the captain sunk to the earth; where he lay almost senseless for some time; and was only roused again by the hope of being able to terminate his miseries by throwing himself into the sea. Before he gained the beach, however, he had time to consider that, in destroying himself, he destroyed eight others; and with a humble reliance upon the mercy of Providence, he resolved to spare what little life he had remaining. His crew gathered about him as he reached the shore, in order to learn the result of his adventure;—but all he had to communicate was, that ' they could go along the beach two miles before meeting again

with the perpendicular cliffs, and that they would find great relief by bathing their bodies in salt water.'

They arrived at the cliff about mid-day; so much exhausted that they could not think of trying to surmount it; and they concluded, therefore, to lie down and rest, in the shade of an overhanging rock. Two hours of negative happiness thus passed away: and the refreshment afforded by sleep and by a light sea breeze, added to the ardent hope of finding, in the higher ground, some substitute for food and drink, enabled them, with the greatest exertion, to attain the summit of the cliff. The captain had endeavoured to prepare them for no very delightful prospect: but the sight of an almost illimitable extent of reddish ground, baked almost to flint, and variegated with nothing but gravel and ragged stones, was really more than they had formed any conception of. To say they wept, is saying nothing;—and what indeed *can* express the suffering of human beings, who are fain to moisten their parched tongues by the very tears which those sufferings called forth! (p. 59.) The captain exhorted them to go forward by every means in his power: and their hopes were somewhat revived by observing the dry stalk of a small plant, resembling the parsnip, and the remains of some locusts, which lay scattered over the earth. Near evening, too, they discovered some small holes, which, as they found no tracks on the surrounding dust, they concluded must have been dug by some human being; and about sun-set they saw, on a small spot of sand, the imperfect track of a camel. These were omens of better times. They all started on again with a new impulse of hope; nor had they travelled long before that hope was partially realized in the discovery of a distant light. The crew would have approached it without delay; but the captain had read enough of the Arabs to know that a visit in the dark would only provoke their butchery; and he prevailed on his men to lie down and be contented till day-light. On the morning of the 10th, accordingly, they set forward; and, on mounting the little eminences to the eastward, they descried a large company of Arabs watering their camels, in a valley, formed by sand hills on the north, and by the abrupt cliffs on the south. One man and two women immediately approached them; the former brandishing his scimitar, and the latter throwing sand into the air. The others soon followed the example; and our crew soon found themselves surrounded by a set of robbers—who pulled them this way and that,—cut each other to the bone over the heads of their captives,—and fought for nearly an hour, with an increasing earnestness, which grew almost into hostility. The property fell at last into the

strongest hands; and no one paid any more attention to his wounds than merely to rub off the blood by means of sand. The captain had been particular in cautioning his men against 'drinking too much at a time, in case they ever came to water;' and, by way of enforcing that premonition, he drank himself a half a gallon the moment he got at it. All had a diarrhœa through the same excess. In the course of an hour or two, one party of the captors took Mr. Williams, Robbins, Porter, Hogan, Barrett, and Burns; set them naked on the bare backs of the camels; and started again on their journey into the interior. The captain, Mr. Savage, Clark, Horace, and Dick, the cook, who remained behind, were obliged to assist in drawing water for the camels, and in replenishing the goat skins for future use. These skins are stripped off the animal as whole as ever, except at the neck; and, when filled with water, are hung on each side of the camel, by means of a small rope tied to the fore legs. The women and children of a company are carried under the camel's belly, in baskets constructed of the skins of the same animal, stretched over a wooden rim:—the men ride before the hump, on a rude kind of saddle, made of the same sort of skin, drawn tight over a small wooden frame. The remainder of the company were now ready;—the way was steep and sandy: our sufferers were obliged to assist in driving the camels; and, before they reached the level country, they were reduced to the necessity of being driven themselves. Here they stopped; and the camels were made to lie down and rest.

A journey across the Zahahrah, is such a monotonous business,—and we have already taken up so much room with the detail of what our captives suffered up to this point,—that we must complete the remainder of the narrative in more compressive terms.—It is a pretty general impression, that the African Desert is nothing more than a vast mediterranean sea of sand. The truth is, however, that the ground work is a soft, reddish brown rock; extending from about the 18th to the 26th degree of north latitude, and from the Atlantic ocean on the west, to we know not what precise limit on the east. It is in general about five hundred feet above the level of the sea, and between two and three hundred above that of the territory on its borders. In short, we can compare it to nothing else but a huge brick, laid longitudinally across the continent. About four fifths of its surface are composed of reddish earth, mixed with gravel, sand, and stones,—all baked down as hard as marble, and forming, with the remaining fifth of bare rock, a surface as smooth and invariable as that of the sea in a calm. At intervals, of from ten to twenty and thirty miles, however, there are vallies of from one to four and five acres, scooped out in the form of

a bowl, to the depth of about thirty feet from the level of the plain. They serve as receptacles for the little rain that can fall upon a country where no exhalations can take place; and are thinly overspread with weeds, dwarf thorn-bushes, and one or two other vegetables. Of the weeds we have no particular description in the Narrative; though the author has told ourselves that they are three or four feet high—full of prickles—and a considerable luxury to the camels. The thorn-bush is from two to five feet high—with a spear shaped-leaf, of an inch thick—one and a half broad—from two to two and a half long—and so strongly impregnated with salt, that though the author and his companions were almost dead with hunger and thirst, they could not bring themselves to eat a mouthful of it. In some parts of the Desert, the camels can hardly get along for a curious sort of plant, which grows up about six inches, in a trunk as large as a man's leg; and then ramifies on all sides into fluted and jointed branches, which ascend to the height of two feet; terminate very abruptly, and are armed all over with sharp thorns, about two and a half inches long. Their general circumference is about three inches; and on the top of each there is a single rose-coloured flower of three leaves; which are about an inch in length, and though erect in the morning, are prostrate at night. Our readers will form an idea of the whole plant, by comparing it to a chandelier, when the wicks are on fire. It yields a juice which is almost as biting as aquafortis; and the camels seldom nip it off, except when they can find nothing else. These vallies afford one more small plant, which, our author says, resembles what is familiarly called shepherds' sprouts. It is a tender vegetable, which grows up rapidly after a rain, and is as rapidly devoured by the first company that encounters it. The dwarf thorn-bush sometimes has a few snails on its branches:—And this completes the catalogue of what vegetable and animal productions are found in those paradisiacal *oases*, to which allusion is so frequently made.

We must now crowd into a few words some account of the manner in which the Arabians live, or rather wander; and then take up again the thread of Captain Riley's Narrative. The great families which compose an Arabian tribe, are generally in the habit of travelling by themselves:—and considering the inclemency of the climate and the want of subsistence, we should be inclined to discredit the tale of there being from two hundred and fifty to three hundred in every such family, if we were not told at the same time, upon what we think is, to say the least, very plausible evidence, that the *forefather* of all is sometimes known to be as many as three hundred years old! There were three people belonging to the tribe in which Captain Riley

was a slave—two old men and one old woman—who had lost all the hair from their heads, chins, and other parts of their bodies. Their flesh had entirely wasted away: their skin appeared to be dried, and drawn tight over their bones and sinews; their eyes were extinct; and they had apparently lost the use of every limb, and of every sense. After his redemption at Mogadore, our author asked Šidi Hamet how old he supposed these venerable gentlemen to be. He answered, about eight *zille*, or Arabic centuries; which consist of forty lunar years, reckoning twelve moons to the year—He added also, 'that it was very common to find Arabs on the different parts of the Great Desert five *zille* old, retaining all their faculties, and that he had seen a great many of the ages of from seven to eight *zille*.' When the captain returned, that in other parts of the world very few people ever live over two *zille* and a half, and that it would be impossible to make his countrymen believe that any other people would live seven or eight, Sidi talked very rationally on the subject, (p. 375) and, in our opinion, made out his case pretty well. When we reflect, indeed, that an Arab leads a regular life from his birth to his death; that he eats very little besides milk—the purest, most nutritive, and most digestible of all food; that his mode of life, while it does not subject him to hard labour, yet compels him to work enough for exercise; that the climate he lives in, though hot, is perfectly dry; and that, last but not least of all, he drinks nothing like ardent spirits—we confess we are inclined to think with Captain Riley, that his quondam master's account is by no means destitute of reason.

These—*ancestors*, we may almost call them, are treated with the greatest tenderness. The whole family rise at day-light; and while the men are milking the old camels, suckling the young ones, performing their ablutions with sand, looking towards Mecca, and repeating the Koran,—the women are engaged in striking the tent, packing up the household furniture, and making a general *clearing-out* of the fleet. The parent of the family is lifted into a sort of basket on the camel's back; where he 'seems to sit and hold on, (says our author) more from long habit than from choice.' Some of the children are placed by his side; and, after communicating to the rest the route he intends to take, he starts off with his gun in his hand; urging his camel by a lively tune, if he wishes it to trot, and by a solemn one, when he wants it to walk only. Although the Desert is not, as we said above, a vast ocean of sand, it has, nevertheless, a great many more analogies to the sea than would be manifest at first sight. The motion of camels resembles, our author tells us, the heavy rolling of a ship at

sea; their long necks answer all the purposes of top-masts, so that when they fall among the abovementioned chandelier plants—they are enabled to pick out a channel, and to sail among them like a vessel among rocks; and if they are to ascend any eminence whatever, they work their way by zigzag navigation, like a ship beating against the wind. It is the general rule to start at day-light, and to halt again about four o'clock in the afternoon. As soon as the old man finds a good encamping ground, the information is communicated to his wife; who unloads and dismisses the camels; clears away the small stones and pitches the tent; spreads her mat; arranges the furniture, and hangs up the water-skins. The camels are brought up and moored with their sterns towards the tent; and the whole family then betake themselves promiscuously to the mat, which forms the floor of the tent; the children filling up the chinks and interstices between the old folks. At midnight the whole are awoke; the camels milked; the milk distributed from the patriarchal bowl; and preparation set on foot for a decampment. These are the general outlines of Arabian life. For a detail of its particulars, we must refer our readers to the XXVIth Chapter of the Narrative before us; from which, however, we cannot omit to extract the following account of a Lancasterian system of education among the natives, and of the clumsy manner in which they perform their smith-work.

'They all learn to read and write: in every family or division of a tribe, they have one man who acts as teacher to the children: they have boards of from one foot square to two feet long, and about an inch thick, by eighteen inches wide: on these boards the children learn to write with a piece of pointed reed; they have the secret of making ink, and that of a very black dye: when a family of wandering Arabs pitch their tents, they set apart a place for a school: this they surround with broken shrubs in the desert to keep off the wind—here all the boys who have been circumcised, of from eight to eighteen or twenty years old, attend, and are taught to read and to write verses from the Koran, which is kept in manuscript by every family on skins: they write their characters from right to left—are very particular in the formation of them, and make their lines very straight: all the children attend from choice or for amusement. The teacher, I was told, never punishes a child; but explains the meaning of things, and amuses him by telling tales that are both entertaining and instructive; he reads or rehearses chapters from the Koran, or some other book, for they have a great many poems, &c. written also on skins: when the board is full of writing, they rub it off with sand, and begin again: they enumerate with the nine figures now in use among all European nations, and in America, and were extremely astonished to find that I could make them, and

understand their meaning, saying one to another, ' This man must have been a slave before to some Arabian merchant, who has taught him the manner of using the Arabic figures, and contrary to his law, unless indeed he is a good man and a believer.' The boards on which they wrote seemed to have lasted for ages—they had been split in many places, and were kept together by small iron plates on each side, fixed by iron rivets: these plates, as well as their rude axes, of which each family has one, are made of tempered iron, by the smiths, which belong to and journey with the tribe. I saw several of them at work. They burn small wood into charcoal, and carry it with them on camels: their anvil is made of a piece of iron a foot long, and pointed at the end—this they drive into the ground to work on—the head of the anvil is about six inches over: they make their fire in a small hole, dug in the ground for that purpose, and blow it up by means of two skins curiously fixed; so that while one is filling with air, they blow with the other, standing between them—with a hand placed on each, they raise and depress them at pleasure. By means of a clumsy hammer, an anvil, and hot irons to bore with, they manage to fix the saddles for themselves to ride on, and to make knives, and a kind of needles, and small rough bladed axes. This forge is carried about without the smallest inconvenience, so that the Arabs even of the desert are better provided in this respect than the Israelites were in the days of Saul their king, Samuel, chap. XIII. verses 19 to 23—' Now there was no smith in all the land of Israel: for the Philistines said, lest the Hebrews make them swords or spears.'—Pp. 371, 2, 3.

The company in which Captain Riley and his crew were slaves, took an eastern* course, from the borders of the Desert, where we left them, and journeyed, upon an average, about 30 miles a day. Our captives were sometimes put upon a camel's back; but the great motion of the beast, together with the roof-like sharpness and declivity of his rump, rendered such a ' mode conveyance' worse than even walking over ragged stones with bare feet; and, though their masters strictly enjoined them to stick on, they frequently took occasion to slide off and follow on foot. At night, when the camels were milked, the Arabs left for their prisoners just enough of the milk to keep them from absolute starvation. One or two of the men—who were about 150 in all—had a little compassion on their sufferings; but the remainder of *them*, and every one of the women without exception, were outrageous in their treatment of such Christian dogs. An old villain, by the name of Hamet, saluted the captain one evening by his title in Arabic—Rais; and, after he found the

* It is put down S. E. in the book; but the author tells ourselves that it must have been nearly due east.

boy was called Horace, he was every instant 'yelling out *Hoh Rais* for something or other.' On the 18th the last drop of water was consumed; and it was resolved by a council held during the night, that the caravan should tread back their steps and supply themselves again at the wells, whence they started on the 11th. By this time the riding, and walking, and beating, and starving which our captives underwent, had reduced them almost to skeletons; and taken off the skin of what little flesh there was remaining. The captain conjectures that they had travelled about 300 miles; and all that weary way was now to be trod over again. On the 19th they began the journey; travelled with much speed on the 20th; but did not go forward at all on the 21st; about the middle of which day the company were joined by two strangers, each armed with a bright double-barrelled musket, and seated on camels loaded with goods. They were two brothers, Seid and Sidi Hamet,—Arabico-Moorish merchants, who had 'blankets and blue cloth to sell.' The latter had himself been once led captive, and knew how to pity the wretches whom he saw in the same predicament. Captain Riley had already learned enough of Arabic to converse intelligibly: Sidi Hamet got him to tell over his story; and though he thought it a shame that 'men who had beards like him' should weep at any thing, he could not, with all his philosophy, refrain from shedding tears. The captain told him that he had a friend in the Sultan of Morocco's dominions, who would be willing to redeem himself and his companions at any reasonable price: and the Mussulman was so touched with sympathy, mixed too perhaps with some little hope of gain, that by the 26th of the month he had bought up the whole five of the sufferers.

On the 28th Seid, Sidi Hamet, a young Arab by the name of Abdallah, and our five slaves set off on two old camels, for the great town of Swearah; which turned out to be Mogadore. They took a N.N.E.* direction; and after having proceeded all day with the 'long trot,' they stopped at night in a little valley of thorn bushes. The same thing was repeated on the 29th; during which day the author computes the distance gone over at about 105 miles. On the 30th they came to the forsaken bed of a deep river,—where they found a cool spring of water, which greatly refreshed the whole cavalcade. Here Sidi Hamet took occasion to interrogate the captain re-

* It is said E. S. E. in the Narrative; which is manifestly erroneous. Our captives were, as near as we can ascertain, about 250 miles from the ocean when they set out with Sidi Hamet; and as they struck the sea in a pretty direct line after travelling 700 miles, their course, as may be easily calculated, could only have been something like what we have stated in the text.

specting his friend in Swearah: and it was agreed between them, or rather it was dictated by the former, that the whole redemption money should be 700 dollars. They travelled the same day ten miles more in a north-western course—making in all about 50. On the 1st of October they travelled about 40 miles; on the 2d Sidi Hamet had lost his way, and frequently stopped and smelled along the sand in order to find it again—but they got over 40 miles more; on the 3d they halted, after travelling 15; and on the 4th they went about 35. In the forenoon of the 5th they fell in with huge sand-hills, 200 feet high, which were drifted like snow banks upon the surface of the Desert, and which, our author thinks, were nothing more than accumulations of grit worn off the shore by the water, and blown up the rocks by the trade winds. They travelled 35 miles this day; and about 32 the next; during the night of which Captain Riley had the satisfaction of hearing the sea roar. On the 7th, 8th, 9th, 10th, 11th, 12th, and 13th, they travelled 360 miles; but saw nothing which we can afford room to particularize.

On the 14th, they came to the edge of the Desert,—which was an abrupt precipice of about 300 feet; and through a gap in which they descended to the lower region. It was a plain declining to the west, and covered with round pebbles, like those of a sea-beach. The cliff, too, bore evident marks of having been formerly beaten with waves;—and there can be very little doubt, in short, that the plain just mentioned was formerly the bed of the sea. At present, the shore is a perpendicular rock of between 1 and 200 feet high, about 6 miles to the westward of what we take to be its old boundary. Sidi Hamet purchased a few goats from some Arabs whom they encountered; our captives had a part of the meat; and, after a journey of 30 miles, they 'slept pretty soundly' all night. On the 15th they travelled 20 miles; and, towards evening of the next day, they were obliged to pass an arm of the sea, which, as the tide had gone out, was only up to their hips and about 100 yards broad. This brought them 25 miles nearer to Swearah. On the 17th they travelled 50 more. On the 18th the bold cliffs which had formerly been washed by the sea began to be 'overtopped with high hills rising far into the country,' and presenting to their view an aspect very different from that of the Desert. They met other companies of Arabs pretty frequently; and every thing began to have the appearance of comparative cheerfulness and plenty. About noon they found themselves in a very beaten tract between high mountains; and towards evening they came to a river about two feet deep and 30 broad; the water of which was clear as crystal—brackish—and 'literally filled with beautiful large fish' which were every

moment jumping above the surface. They got, this day, 36 miles. During the 19th, they came on the inclined plain again; and, towards evening, they found a heap of barley straw and a small spot of cultivated ground. This brought them 30 miles farther. About 2 o'clock, P. M. of the 20th, they came into a valley which disclosed to their view a few rough huts of stone, near a stream of clear water running over a pebble bed and bordered with green bushes and shrubs in full blossom. It was the river Noon. Our famished captives satiated themselves with its waters; lay down and slept under some barren date trees; and, when they awoke, were presented by their master with about four pounds of honey—which they 'devoured, comb and all.' They went only 15 miles this day; and did not leave their encampment on the morning of the 21st.

The place they had stopped at seemed to be a sort of thoroughfare; droves of camels, loaded and unloaded, constantly passing through it in almost every direction. In the forenoon, our company took up their course along the right bank of the river,—and, after travelling a short distance, ascended the steep and craggy mountains to the eastward. On the 22d they steered to the north; and, about noon, they reached, through deep ravines, the inclined plain, which we have once or twice mentioned. On the 23d they procured some fresh fish; and travelled along the sea coast about 40 miles. They went about 50 on the 24th; during which day they passed one or two walled towns, and allayed their thirst at an arched cistern, built of stone and lime —about 80 feet long, 10 feet wide, and 20 deep. In the night of the 25th, they stopped under the walls of a village owned by one Sidi Mohammed. Early next morning Sidi Hamet brought to Capt. Riley a small scrap of paper, with a little black liquid and a reed; said he must write a letter to his friend in Mogadore; that the whole ransom must be $920, besides the double-barrelled guns; and that himself and his companions must stay where they were, till an answer was returned. Sidi was going with the letter himself:—the captain 'begged hard to be taken along;' but his master would not suffer it; and he was obliged to content himself with imploring his friend in Mogadore—whoever he might be—to pay the required ransom and send them an interpreter and a guard. Sidi Hamet and Sidi Mohammed set out with the letter; leaving Seid and one Bo Mohammed to take care of the prisoners.

The walled villages, which we have once or twice alluded to, are square enclosures of about 400 yards on a side,—built up with stones and clay, to the height of about 15 feet. The gate is made of thick planks, merely hewed out with an axe; fastened

together, we are not told how—probably by means of iron plates; and inserted into the groove of an upright shaft, which turns at the top and bottom, in sockets drilled out of stone slabs. The dwellings within are built with the same materials as the wall. They are about 25 feet square—about 15 high—and have a door and an air hole. Each village belongs to one great family, and each house to one subordinate family. The pen for sheep or goats is in the centre of the town; and the houses are built around upon the borders. A city is nothing more than an irregular collection of such villages. Ετερος δ' ετέρου πόλιν εξαλαπάξει. One of these villages may be destroyed in a few hours; and whenever 'God delivers that of one Arab into the hands of another'; that is, when it is left without adequate protection, he never fails to beat down the walls and plunder the inhabitants. Their battering-ram consists of a huge stone, hung like a pendulum from a frame made of poles and crotches. Our author came to one village where two of these pendula were yet standing. The walls were beaten down; and the ground strewed with human bones.

On the eighth day after Sidi Hamet's departure, Captain Riley received an answer to his letter, from an English gentleman, by the name of Willshire; who not only agreed, with the greatest willingness, to advance the stipulated ransom; but sent, by the carrier of his letter a basket of clothes, and a box containing some hard biscuits, boiled neat's tongue, tea, coffee, sugar; a tea kettle and pot; cups and saucers, and a few bottles of rum. Early next morning they started for Mogadore; and after travelling 40 miles north-westward over a very sandy country, with here and there a cultivated spot, they came to a city on the right bank of a rivulet. On both sides, there were walled villages, numerous herds, and many inhabitants. The city covered about 100 acres of ground; which is divided into compartments bv means of mud-walls. Loads of Indian corn and barley continued to enter the city from the neighbouring fields until about 8 o'clock in the afternoon; when the gate was shut, and a watch stationed on the walls. During the 4th of November our captives saw no less than 50 walled towns; at one of which (Stuka, it appears) they stopped for the night, after a journey of about 50 miles. Here a Sheick by the name of Ali,—who was Sidi Hamet's father-in-law, and who had travelled with the company ever since his departure,—laid a scheme to get possession of our captives, and intrigued with the governor to second his designs. He pretended that Sidi Hamet owed him $600; and refused to let his property go out of his hands, till he returned and paid up the debt. The news was, accordingly, to be carried to Mogadore;—but, in the meantime, *Rais bel Cossim*, the person who brought Mr. Willshire's let-

ter, was successful enough to gain over the governor; so that, on the 8th or 9th of November, the company set out again for their place of destination. They reached Santa Cruz about sun-set; left the town again in the night, in order to outmanœuvre Sheick Ali; and travelled (north-eastwardly, we suppose,) till mid-night of the next day. On the 10th, they passed some beds of rivers, and came to a place where the natives manufactured salt. The water issued from a pretty high mountain; and was conducted by gutters into shallow pans made of clay; where it was evaporated and crystallized. About eight o'clock, next morning, they came in sight of Mogadore; and had not long afterwards the inexpressible satisfaction of meeting their deliverer. Mr. Willshire conducted them to the city; and treated them with all the kindness and assiduity of a brother. In a short time the captain received a letter from Mr. Horatio Sprague, in Gibraltar; who paid Mr. Willshire the money he had advanced;—and on the 4th of January, 1816, Mr. Savage, Burns, Clark, and Horace, were shipped for Gibraltar, on board of a Genoese schooner, sailing under English colours. The captain himself undertook a journey to Tangier, in order to see the American Consul General, and make some arrangements to liberate the remainder of his crew. After an interesting journey, he arrived at that place on the 19th; left it again on the 29th; and was, the next day, welcomed to Gibraltar, by Mr. Sprague. On the 2nd of February he set sail with his crew, in the ship Rapid; and on the 20th of the next month, was landed safely at New-York. After visiting his family in Middletown, Connecticut, he started for Washington; where he was introduced to Mr. Monroe, and procured, from the treasury department, $1852 45—the ransom money paid by Mr. Sprague—with a promise that no pains should be spared to redeem the remainder of the crew. Porter has since returned to his country; and Captain Riley has lately received from Mr. Willshire a letter, which encourages us to hope that the remainder will, ere long, be rescued from slavery.

Before we proceed to give an abstract of Sidi Hamet's story, we shall consider, very briefly, an ingenious attempt of a late writer in the Supplement to the Encyclopædia Britannica,* to ascertain the termination of the river Niger. After stating, and endeavouring to refute, the theories of others on the subject, he gives it as his own opinion,—'That the great river course which stretches across Africa consists in fact of *two rivers;* that one of these flows *eastward* by Sego and Tombuctoo, the other *westward* through Wangara and Cassina; and that these two rivers, at some intermediate point, not far from

* Article, AFRICA.

the modern position of Houssa, unite in a common receptacle.' He first examines the testimony of the Arabian writers; who agree in stating, that the *Nile of the Negroes* runs westward, into the sea, or *great water;* and that 100 miles from its mouth, and about1200 from Gana, there is a large city called Ulil. He acknowledges himself, that 1200 miles, in a direct line from Gana, would reach beyond Tombuctoo; and, as his 'intermediate point' is still 100 more to the west, one can hardly help thinking, that the supposition of its being a considerable distance eastward of the last mentioned city, is rather poorly corroborated by Arabian authority. He attempts to refute this objection, however, by supposing that the 1200 miles were not ascertained by rectilinear measurement; but are merely the distance of the circuitous route along the bank of the river. This depends, again, upon another supposition, that, in travelling along a river that is going *their way*, the Arabians are accustomed to follow its meanders; which is *altogether* a supposition: we have no positive evidence of the fact; and we are told by Sidi Hamet, on the contrary, that, when he was himself travelling on the Niger, he once lost sight of the river for fifteen days.

'Ulil, however, is still more precisely fixed (says our theorist) by the assigned distance (*Edrisi*, 40.) from Audogost (Agades) of *one month*, which, in the most direct line, would not reach beyond Houssa, and supposing a probable deflexion to the south would fall several days short of it.' Yet, what surprises us a good deal, in the very map which accompanies this article, the city of Ulil, so far from being placed several days 'short of Houssa,' is, in fact, located several days 'beyond' it! What surprises us still more, the interior *great water* which our author supposes, and which he proves to be west of Tombuctoo, is set down a great way eastward of it! And what absolutely astonishes us, he thinks he is warranted in telling us, that, 'from these collected statements, we may consider it as the *clear and united* testimony of the Arabian writers, that, immediately to the east of Houssa (which is far east of Tombuctoo) there exists a great lake, or inland sea, which receives the eastern branch of the Niger.' Now when our readers consider that, from a principle of religion, the Arabian writers never take the trouble of examining a country which is not Mahommedan; and that, from the foregoing exposition, it is impossible to reconcile their statements either with themselves, or with the known localities of the region of which they treat; we think they will agree with us, that the only 'clear' information to be extracted from them is, that, somewhere westward of Gana, the Nile of the Negroes runs into a great water.

The testimony which the writer adduces from modern authors, is altogether of the suspicious sort, called *hearsay*. 'Ben Ali *heard it stated* at Tombuctoo, that the Niger terminated in a lake in the desert,' (or rather) 'was lost in the sands *south* of Tombuctoo.' Mr. Jackson was told, we know not by whom, 'that fifteen days journey east of Tombuctoo, (that is, three or four beyond Houssa) there is an immense lake called *Bahar Soudan*, or Sea of Soudan; on the *eastern* bank of which begins the territory of *white people*,* denominated by the Arabs (N'sarrath) Christians, or followers of Jesus of Nazareth, who navigate the lake with large decked vessels, containing from 100 to 150 men.' A Mr. Barnes states,—that 'he *heard from the black traders* that the Niger discharges itself into a large lake; on the borders of which there are white inhabitants.' And, last of all, Mr. Park 'obtained the following information during his last residence of two months at Sansanding: One month's travel *south* of Baedoo, through the kingdom of Gotto, will bring the traveller to the country of the Christians, who have their houses on the banks of the Ba Sea Feena; this water they describe as *incomparably larger* than the Dibbie, and that it *flows sometimes one way and sometimes another*.' The latter striking circumstance, (which, as it can mean nothing less than the ebb and flow of tides, is plainly inapplicable to an inland lake,) our author passes over in the most unconscious and profound silence. In the foregoing statements, our readers will observe, that two out of three place the *great water* south of Tombuctoo: And we must, in fine, submit it to their own decision, whether we can safely draw, from the whole testimony, any more definite conclusion than this,—that, westward of Gana and south of Tombuctoo, the Nile of the Negroes runs into a great water, which 'flows sometimes one way and sometimes another,' and on the eastern borders of which there is a race of white people, who sail in large decked vessels, containing 100 or 150 men.

Before Sidi Hamet left Mogadore, Captain Riley got him to give an account of his journeyings in the interior of Africa. He had been three times to Tombuctoo, and once to Wassa-

* We lay no stress upon the improbability of there being such a race of men in the heart of Africa; for we find the report of their existence to be more than 300 years old. Bemoin, the Negro king, who went to Lisbon, and was made a Catholic in 1489, informed king John, that east of '*Tombut*,' there existed a white people, who were neither Mahommedans nor idolaters; but had a religion resembling the Christian. The same thing was stated by some Friars who travelled in the Holy Land, and by some Abyssinians, who came into Spain. Indeed, it is said, that a Portuguese of the name of Covellan absolutely saw the prince of this people.

nah, a city about 54 days south of it. While travelling on the Desert, our author had frequent occasion to remark the accuracy with which an Arab steers his *ship of the land;* but, in order to be more fully satisfied upon the point, he took Sidi Hamet on the roof of Mr. Willshire's house, one very clear evening; and tells us that his observations respecting the stars were 'perfectly astonishing.' He immediately pointed out the polar star and the great bear; called over the Arabic names for the planets and fixed stars; and, to show his knowledge of the cardinal points, he crossed two sticks at right angles, directing one to the north, and then proceeded to divide the circle into eighths and sixteenths by means of two other similar crosses. The next day, he was requested to give some account of his travels: he readily complied; and Captain Riley took down his story as he went along. The most faithless Arab could not, under these circumstances, be tempted to string together a series of falsehoods; and when our readers observe the simplicity and truth with which Sidi Hamet describes a great many objects which, though new to him, are perfectly familiar to us, we think they will be strongly induced to believe that the greatest part of what he tells us is substantially correct. Above all things, he could have no temptation to deceive his listeners upon a dry question of geography. And as he was not interrogated by any person, with a view to extort facts for a preconceived theory, we cannot see any good reason why his story, on this point at least, should not be believed.

While he was in Tombuctoo the second time, the king, or *shegar*, made up a caravan for Wassanah, and hired Sidi Hamet and his brother to turn in their two camels. In two hours' ride to the south, they reached the bank of the river, 'which is called at that place Zolibib (Joliba), and was wider than from Mogadore to the island; about 500 yards.' Thence they took a course which was a 'little to the south of east;' and, after travelling six days with the river on their right, they stopped two days at a place called Bimbinah. 'Here the river turned more to the south-eastward, because there was a very high mountain in sight to the eastward.' They 'then went from the river side, and pursued their journey more southwardly, through a hilly and woody country, for fifteen days, when they came (he says) to the same river again.' He does not say a word about crossing the river; and the expression of 'going *from* its side,' as well as the constant remark that the river was on the right, must preclude the supposition of his having crossed it at this place. They rested their camels and asses five days; 'and then went onward again in about a S. E. direction, winding, as the river ran, for three days;' when 'they had to climb over a very

high ridge of mountains,' in consequence of the 'river's running *against the steep side*' of it. From the top of this ridge, which it took six days to cross, they 'saw a large chain of mountains to the *westward.*' And on the other side, they 'came to the river's bank again, where *it was very narrow, and full of rocks, that dashed the water dreadfully.*' After a journey of twelve days more,—during which they 'wound a little every day, sometimes to the east, then to south again,' crossed 'a great many small streams that emptied into the *great river* on their *right hand,*' and saw 'very plainly the high mountains on the west side of it,'—they came to a ferrying-place, where they rested seven days. In fifteen days more, they reached the city of Wassanah. During their abode at this place, 'the brother of the king told one of Sidi Hamet's Moslemin companions, that he was going to set out with 60 boats, and to carry 500 slaves down the river, *first to the southward, and then to the westward*, whence they would come to the *great water*, and sell them to *pale people*, who came there in *great boats*, and brought muskets, and powder, and tobacco, and blue cloth, and knives, &c. He said, also, that 'it was a great way, that it would take him *three moons* to get there, and that he should be gone 20 moons, before he could be back by land; but should be very rich.' Again, 'we saw (says Sidi Hamet) a great many of these people who had been down the river to see the great water;' and 'they said, the pale people lived in great boats, with guns as big as their bodies, that made a noise like thunder, and would kill all the people in a hundred negro boats.' These are all very strong corroboratives of the inference we have drawn from other authorities; and we think there can now be little doubt, that the river Niger empties into the Atlantic ocean.

The next question is,—whether the Congo or Zair of South Africa, be a mere continuation of it? From the facts disclosed by an African trader, of the name of Maxwell, who had examined the latter river, and made a chart of its lower extremity—Mungo Park was induced to embrace the affirmative. The Congo is ten miles wide at its mouth, and freshens the waters of the ocean for upwards of thirty miles. It swells considerably, too, 'some time after the Niger is in flood, and before any rains have fallen south of the equator:' All of which facts seem to furnish a pretty strong ground to conclude, that the two rivers are identical. The only cogent objection urged against such a conclusion, by the writer in the Encyclopædia—is, that the Niger does not correspond with the Nile, either in the magnitude of its floods, or in the time which they take to reach its embouchure. The rise of the Nile is general-

ly about thirty feet; whereas that of the Niger is only about nine. Our author should have reflected, however, that there is certainly as much difference in the breadths of the two rivers, as there is in their respective floods; and that, if Mr. Maxwell's measurement be correct, a rise of nine feet in the Niger would be about equal to a rise of thirty in the Nile. As to the other part of the objection,—that the Congo does not begin to rise as soon after the equatorial rains as we should be led to expect, from the analogy of the Nile,—we have to observe, that very little dependence can be placed upon calculations of *flood-current*, where the data are no more definitely ascertained than those which relate to the Niger. No person has ever measured its rapidity; and we cannot consent to have our author apply to its whole course, the ascertained rate at which it flows near the extremity. We shall state his objection, however, and our readers, can place, of course, as much reliance on it as they please. It is, shortly this:—the tropical rains commence early in June; but, according to Mr. Maxwell's statement, the Congo does not begin to rise till the latter end of September; whereas the flood of the Nile is at its acme by the 17th of June; a difference of time which is conceived to be incredible, even though we consider that the former river is twice as long as the latter.* We turn now to the remainder of Sidi Hamet's very interesting Narrative.

He and his brother Seid set out from Widnoon, late in the fall of 1806, with a caravan of eight hundred men, and three thousand camels, loaded with almost every sort of goods. Before they reached the Desert, they burnt a great quantity of charcoal to feed the camels with, when no other food could be found; and, after travelling twenty-six days, they came to a watering place called *Biblah.* Here they rested seven days; and, in twenty more, reached another well, called *Kiber Jibil.* It was dry; and they were obliged to go towards the sea-coast six days

* We cannot but remark how nearly—according to Sidi Hamet's story—the length of the Niger corresponds to that which has been given it by precedent calculations. Our readers will see above, that in the journey from Tombuctoo to Wassahna, the traveller took up, in all, sixty-eight days; and that, by the information obtained at the latter city, the distance to the mouth of the river was eighty-four more. Fourteen days out of the sixty-eight he laid by; and, if we take the same proportion from the eighty-four, the distance from Wassahna would be about sixty-two. The common rate of journeying is about thirty miles a day; and of course, the distance from Tombuctoo would be three thousand six hundred and sixty miles. By former computation the whole distance is four thousand; so that, if we add to our number three or four hundred—which, as near as we can ascertain, is not far from the distance between Tombuctoo and the source,—the two calculations will ' coincide surprisingly.'

more in order to find water. They could not give all the beasts a draught in less than six days; when they set off again; and, after travelling four moons, and losing three hundred camels, went down into the country of Soudan. Here they stopped one moon, on the bank of a little stream; fed plenteously on barley and Indian corn; and started eastward for Tombuctoo, on the borders of the Desert. Two moons brought them to its 'strong walls.' The camels 'stopped in a deep valley;' while the men went unarmed 'near the city,' and traded with the negroes; 'who had gum, and gold rings, and gold powder, and great teeth, such as are sold at Swearah, and slaves, and fine turbans; a plenty of cows and asses, and a few sheep, and barley, corn, and rice.' In the Widnoon caravan there were one hundred camels, loaded with iron and knives; two hundred, with salt; and all the rest with haicks, (cloaks), blue and white cloth, amber, tobacco, silk handkerchiefs, *chilly weed*, spices, and a great many other articles.' After staying one moon and a half---during which time they lost twenty camels by the 'thievish Arabs,' (Sidi Hamet says this)---the caravan set out again for Widnoon; where all but thirty-one of the men arrived safely and in due season.

The second caravan in which Sidi embarked, consisted of four thousand camels and one thousand men; and it was determined to take the common straight route for Tombuctoo. They journeyed first six days 'around the bottom of the Atlas mountains;' stopped ten days; prepared their charcoal, and were obliged to travel fifteen days before they came to a valley or oasis. It was so large as to contain twenty wells; though there was water in only six. After resting seven days, they set out again; and in three days came to innumerable drifts of sand; 'not such coarse sand as you (Captain Riley) saw near the sea;' but 'as fine as the dust on a path, or in a house.' They toiled in this sand six days; when a fierce south-east wind (called the wind of the Desert) began to blow it so thick into their faces, that they were obliged to unload the camels; pile up the merchandise, lie down, and *take it*. It 'blew dreadfully;' and the shower of dust was so great that they were occasionally obliged to shift their positions in order to get a little air.*

* Thomas Legh, Esq. M. P. has lately published an interesting 'Narrative of a Journey in Egypt and the Country beyond the Cataracts;' in which we find a similar account of this famous wind. 'While opposite Diospolis Parva (says he p. 43.) we experienced a gale of the *Kamsin*, which, though we were on the water, and consequently in a great measure protected from its violence, was still so formidable in its effects, as to dispose us to give full credit to the accounts of travellers, and indeed of entire caravans being overtaken and buried in the sand, by this destructive wind

The wind continued two days; when it was discovered, on crawling out of the sand, that three hundred men were missing, and two hundred camels dead. The rest were reloaded in two days; and the caravan took up its course again through the dry, deep and hot sand. They went as fast as they could for twenty days, in order to rest and refresh themselves twenty more, at a famous watering place, called *Haherah.* Our readers must imagine their despair and insubordination when they found not a drop of water there. The Sheick lost his authority; and it was not till after running two days up and down the valley, each to save his own life and property, that they saw the necessity of obedience, and joined together in digging out the wells. They worked five days, without finding the smallest sign of water. Their impatience and desperation were utterly uncontrollable; and when the Sheick ordered, as a last resort, that all but three of the camels should be killed for food and drink, a most ferocious quarrel ensued; each fought for his own property; and, before the affray was over, the blood of the Sheick and of two or three hundred of his men, literally served to allay, in part, the thirst of the remainder. At night, Sidi Hamet and his brother killed four out of their own six camels; saved a few goods—some barley, and some meal; persuaded thirty more to follow their example; and set out south-westwardly for *Tishlah*—another watering place. Here and there they found a little oases of thorn-bushes; but in twelve days, nine men and fourteen camels perished; and the rest must soon have followed, if a timely thunder shower had not enabled them to satiate their thirst. Thirty skins were also replenished; and the company then took a south direction for the borders of the Desert. Soon after going down* into the cultivated country, they stopped at *Wabilt*, a small town on the bank of a river about one hundred and fifty feet broad—called *Gozen-zair*, by the natives—and *el Wod Tinij*, *the river Tinij*, by the Arabs. After a rest of ten days, they started again for Tombuctoo; travelled four days eastward, through a rich, but hilly country; watered their camels once more; and after going to the north as far as the borders of the Desert, they went eastward again twelve

of the Desert. The air became thick and cloudy, as if a storm of snow or sleet were coming on, and we felt our eyes, ears and mouths filled with fine particles of sand, which were raised and suspended in the atmosphere. We suffered also in our food, for the *pilau*, which formed the great article of our sustenance, was rendered so gritty as to be scarcely eatable; and on opening our trunks which had been closed and locked, we found considerable quantities of sand deposited between the folds of our linen.'

* Sidi Hamet uniformly uses expressions of ascent and descent, in going on and coming off the Zahahrah.

days. Here they struck the great caravan path; and came, in two days more, under the walls of Tombuctoo.

'We had seen a great many negroes near the river: they live in small towns, fenced in with large reeds, to keep off enemies and wild beasts in the night: they dwell in small round huts made with cane standing upright, are covered with the same materials, and daubed with mud, to fill up the openings between them. The negroes were afraid of us when we came near their little towns, and those who were outside ran in and blocked up the passage in a minute; but finding we did not come to rob them, as the large companies of Arabs often do, but that we were poor and hungry, they were willing to exchange barley-corn and meat for some of our goods.'—Pp. 327, 8.

We suspect the Gozen-*zair* is the same with what Adams calls La Mar *Zarah*. Sidi Hamet tells us, as Adams did also, that this country is cultivated with the hoe—that the king of Tombuctoo is an 'old gray-headed black man,'—and that the city itself contains from two hundred to two hundred and fifty inhabitants.* Adams says he saw no shops there; which must certainly be a mistake. That all the goods of so large a place should, as we learn from him, be lodged in the king's palace till they were sold, is almost incredible:—it contradicts all former testimonies; and, as it contradicts Sidi Hamet's also, we must consider it as an oversight. We take this opportunity to observe, however, that Captain Riley confirms Adams' account of the *heirie*, as well as of the Arabian pudding. And in Sidi Hamet's very interesting description of Tombuctoo, there are also a great many coincidences with that of the American sailor. In general, the trading caravans are stopped without the city; and only fifty of the traders *unarmed* are admitted at a time. As Sidi Hamet's company was small, however, they were all let in without suspicion; and he had an opportunity, therefore, not often enjoyed by his countrymen, of investigating the city at his leisure.

'Tombuctoo is a very large city, five times as great as Swearah: it is built on a level plain, surrounded on all sides by hills, except on the south, where the plain continues to the bank of the same river we had been to before, which is wide and deep, and runs to the east, for we were obliged to go to it to water our camels; and here we saw many boats made of great trees, some

* According to the former, it is seven times as great as Mogadore; which, says Captain Riley, contains about thirty-six thousand inhabitants. Adams says it covers as much ground as Lisbon, which has three hundred and fifty thousand souls;—but the houses of Tombuctoo are scattered irregularly; so that, in estimating the number of inhabitants, the extent of surface cannot be a correct standard.

with negroes in them, paddling across the river. The city is strongly walled in with stone laid in clay, like the towns and houses in Suse, only a great deal thicker: the house of the king is very large and high, like the largest house in Mogadore, but built of the same materials as the walls. There are a great many more houses in that city built of stone, with shops on one side, where they sell salt, and knives, and blue cloth, and haicks, and an abundance of other things, with many gold ornaments. The inhabitants are blacks, and the chief is a very large and gray-headed old black man, who is called *Shegar*, which means sultan or king. The principal part of the houses are made with large reeds, as thick as a man's arm, and stand upon their ends, and are covered with small reeds first, and then with the leaves of the date trees: they are round, and the tops come to a point like a heap of stones. Neither the shegar nor his people are Moslemins, but there is a town divided off from the principal one, in one corner, by a strong partition wall, and one gate to it, which leads from the main town, like the Jews' town, or Millah, in Mogadore. All the Moors or Arabs who have liberty to come into Tombuctoo, are obliged to sleep in that part of it every night, or go out of the city entirely; and no stranger is allowed to enter that Millah without leaving his knife with the gate-keeper; but when he comes out in the morning it is restored to him. The people who live in that part are all Moslemin. The negroes, bad Arabs, and Moors, are all mixed together, and marry with each other, as if they were all of one colour. They have no property of consequence, except a few asses. Their gate is shut and fastened every night at dark, and very strongly guarded both in the night and in the day-time. The shegar or king is always guarded by one hundred men on mules, armed with good guns, and one hundred men on foot, with guns and long knives. He would not go into the Millah, and we only saw him four or five times in the two moons we stayed at Tombuctoo, waiting for the caravan: but it had perished on the desert: neither did the yearly caravan from Tunis and Tripoli arrive, for it had also been destroyed. The city of Tombuctoo is very rich as well as very large; it has four gates to it; all of them are opened in the day-time, but very strongly guarded and shut at night. The negro women are very fat and handsome, and wear large round gold rings in their noses, and flat ones in their ears, and gold chains and amber beads about their necks, with images and white fish-bones, bent round, and the ends fastened together, hanging down between their breasts: they have bracelets on their wrists and on their ankles, and go barefoot. I had bought a small snuff-box, filled with snuff, in Morocco, and showed it to the women in the principal street of Tombuctoo, which is very wide: there were a great many about me in a few minutes, and they insisted on buying my snuff and box;—one made me one offer, and another made me another,

until one, who wore richer ornaments than the rest, told me, in broken Arabic, that she would take off all she had about her, and give them to me for the box and its contents. I agreed to accept them, and she pulled off her nose-rings and ear-rings, all her neck-chains, with their ornaments, and the bracelets from her wrists and ankles, and gave them to me in exchange for it: these ornaments would weigh more than a pound, and were made of solid gold at Tombuctoo, and I kept them through my whole journey afterwards, and carried them to my wife, who now wears a part of them. Tombuctoo carries on a great trade with all the caravans that come from Morocco and the shores of the Mediterranean sea. From Algiers, Tunis, Tripoli, &c. are brought all kinds of cloths, iron, salt, muskets, powder, and lead, swords or scimitars, tobacco, opium, spices, and perfumes, amber, beads, and other trinkets, with a few other articles; they carry back in return elephants' teeth, gold dust, and wrought gold, gum senegal, ostrich feathers, very curiously worked turbans, and slaves; a great many of the latter, and many other articles of less importance. The slaves are brought in from the south-west, all strongly ironed, and are sold very cheap; so that a good stout man may be bought for a haick, which costs in the empire of Morocco about two dollars. The caravans stop and encamp about two miles from the city, in a deep valley, and the negroes do not molest them: they bring their merchandise near the walls of the city, where the inhabitants purchase all their goods, in exchange for the abovementioned articles; not more than fifty men from any one caravan being allowed to enter the city at a time; and they must go out before others are permitted to enter. This city also carries on a great trade with Wassanah (a city far to the south-east), in all the articles that are brought to it by caravans, and get returns in slaves, elephants' teeth, gold, &c. The principal male inhabitants are clothed with blue cloth shirts, that reach from their shoulders down to their knees, and are very wide, and girt about their loins with a red and brown cotton sash or girdle: they also hang about their bodies pieces of different coloured cloth and silk handkerchiefs: the king is dressed in a white robe of a similar fashion, but covered with white and yellow gold and silver plates, that glitter in the sun;—he also has many other shining ornaments of shells and stones hanging about him, and wears a pair of breeches like the Moors and Barbary Jews, and has a kind of white turban on his head; pointing up, and strung with different kinds of ornaments; his feet are covered with red Morocco shoes: he has no other weapon about him than a large white staff or sceptre, with a golden lion on the head of it, which he carries in his hand: his whole countenance is mild, and he seems to govern his subjects more like a father than a king. The whole of his officers and guards wear breeches that are generally dyed red, but sometimes they are white or blue: all but the king go

bareheaded. The poor people have only a single piece of blue or other cloth about them, and the slaves a breech cloth. The inhabitants in Tombuctoo are very numerous; I think six times as many as in Swearah, besides the Arabs and other Moslemin or Mohammedans, in their Millah, or separate town; which must contain nearly as many people as there are altogether in Swearah. The women are clothed in a light shirt or under-dress, and over it a green, red, or blue covering, from their breasts to below their knees—the whole girt about their waists with a red girdle; they stain their cheeks and foreheads red or yellow, on some occasions, and the married women wear a kind of hood on their heads, made of blue cloth, or silk, and cotton handkerchiefs of different kinds and colours, and go barefooted. The king and people of Tombuctoo do not fear and worship God, like the Moslemins, but like the people of Soudan, they only pray one time in twenty-four hours, when they see the moon, and when she is not seen, they do not pray at all: they cannot read or write, but are honest, and they circumcise their children like the Arabs: they have no mosques, but dance every night, as the Moors and Arabs pray.' pp. 328—333.

We have already given a sketch of Sidi Hamet's journey to Wassanah, or Wass'nah;—and have only to add that he frequently came across walled towns, and 'saw many trees dug out hollow, which were pushed along with fiat pieces of wood, and were used to carry negroes over the river.' This article is already extended beyond our usual limits; but we believe our readers will hardly blame us for extracting the description of Wassanah—long as it is.

'The city of Wassanah is built near the bank of the river, which runs past it nearly south, between high mountains on both sides, though not very close to the river, which is so wide there that we could hardly see a man across it on the other side: the people of Tombuctoo call it Zolibib, and those of Wassanah call it Zadi. The walls of the city are very large, and made of great stones, laid up like the stone fences in the province of Hah Hah, in Morocco, but without any clay or mud amongst them: they are very thick and strong, and much higher than the walls of Tombuctoo. I was permitted to walk round them in company with six negroes, and it took me one whole day. The walls are built square, and have one large gate on each side. The country all around the city is dug up, and has barley, corn, and other vegetables planted on it; and close by the side of the river, all the land is covered with rice, and there are a great many oxen, and cows, and asses belonging to the city, but no camels, nor horses, mules, sheep, nor goats, but all about and in the city, speckled fowls abound, and there are plenty of eggs. The people of the caravan were allowed to enter the city, but only twenty at a time, and they were all obliged to go out again before night.

'We had been there more than a moon, when it came to my turn to go in. I found almost the whole of the ground inside of the walls was covered with huts made of stones piled up without clay, and some reeds, laid across the tops, covered over with the large leaves of the date or palm tree, or of another tree, which looks very much like a date tree, and bears a fruit as large as my head, which has a white juice in it sweeter than milk; the inside is hard, and very good to eat. The trees that bear this big fruit grow in abundance in this country, and their fruit is very plenty. Their huts have narrow passages between them. The king or chief is called *Oleeboo*, which means, in the negro talk, good sultan: he is a very tall, and quite a young man; his house is very large, square, and high, made of stone, and the chinks filled up with something white like lime, but not so hard: they would not let me go into his house, and told me he had one hundred and fifty wives, or more, and ten thousand slaves: he dresses in a white shirt, that looks like the one worn by Mr. Willshire, and long trowsers, made like them you have on, and coloured like an orange.' Those I then had on, were common wide sailor trowsers. 'He has over his shirt a caftan or robe, with sleeves to it, made of red cloth, tied about with a girdle that goes from his breast to his hips, made of silk handkerchiefs of all colours, and has slips of fine coloured silk tied round his arms and legs: his hair is also tied in small bunches, and he wears on his head a very high hat, made of canes, coloured very handsomely, and adorned with fine feathers: he has sandals on his feet, bound up with gold chains, and a great gold chain over his shoulder, with a bunch of ornaments made of bright stones and shells, that dazzle the eyes, hanging on his breast, and wears a large dagger by his side, in a gold case. He rides on the back of a huge beast, called *Ilfement*, three times as thick as my great camel, and a great deal higher, with a very long nose and great teeth, and almost as black as the negroes: he is so strong, that he can kill an hundred men in a minute, when he is mad. This is the animal that the teeth grow in, which we bring from Tombuctoo to Widnoon, which you call elephants' teeth, and this was the only one of the animals I ever saw; but they told me these creatures were very plenty down the river from Wassanah.' This answers to the description of, and no doubt is, the elephant.

'The king of Wassanah has a guard of two hundred negroes on foot, one hundred of them armed with muskets, fifty with long spears, and fifty with great bows and arrows, with long knives by their sides: they always attend him when he goes out on his beast. He has also a very large army: they fight with guns, spears, and bows and arrows. The city has twice as many inhabitants in it as Tombuctoo, and we saw a great many towns near it on the other side of the river, as well as several small settlements on the same side below. The king nor the people do not pray like the Moslemins, but they jump about, fall down, tear

their faces as if they were mad, when any of their friends die, and every time they see the new moon, they make a great feast, and dance all night to music made by singing and beating on skins tied across a hollow stick, and shaking little stones in a bag or shell; but they do not read nor write, and are heathens. Though the free people in this place do not steal, and are very hospitable, yet I hope the time is near when the faithful, and they that fear God and his prophet, will turn them to the true belief, or drive them away from this goodly land.

'The principal inhabitants of Wassanah are dressed in shirts of white or blue cloth, with short trowsers, and some with a long robe over the whole, tied about with a girdle of different colours: the free females are generally very fat, and dress in blue or white coverings tied about their waists with girdles of all colours: they wear a great many ornaments of gold, and beads, and shells, hanging to their ears and noses, necks, arms, ankles, and all over their hair; but the poorer sort are only covered about their loins by a cloth which grows on the tree that bears the big fruit I have told you about before.' This fruit, I imagine, must be the cocoa-nut, and I have often in the West Indies, and elsewhere, observed the outer bark of this singular palm-tree: it is woven by nature like cloth, each thread being placed exactly over and under the others. It appears like regular wove coarse bagging, and is quite strong: it loosens and drops from the trunk of the tree of its own accord, as the tree increases in size and age. I had long before considered that this most singular bark must have suggested to man the first idea of cloth, and taught him how to spin, and place the threads so as to form it of other materials that have since been used for that purpose, and this first hint from nature has been improved into our present methods of spinning and weaving.

'The male slaves go entirely naked, but the women are allowed a piece of this cloth to cover their nakedness with: they are very numerous, and many of them kept chained: they are obliged to work the earth round about the city. The inhabitants catch a great many fish: they have boats made of great trees, cut off and hollowed out, that will hold ten, fifteen, or twenty negroes, and the brother of the king told one of my Moslemin companions who could understand him (for I could not), that he was going to set out in a few days with sixty boats, and to carry five hundred slaves down the river, first to the southward, and then to the westward, where they should come to the great water, and sell them to pale people, who came there in great boats, and brought muskets, and powder,* and tobacco, and blue cloth, and knives, &c.—he said it

* Adams tells us that, among other things, gunpowder is brought from 'a place called Bambarra, laying to the *southward* and *westward* of Tombuctoo.' It must have come by the way of Wassanah, we apprehend: and this, we take occasion to observe, is another strong confirmation of Sidi Hamet's story.

was a great way, and would take him three moons to get there, and he should be gone twenty moons before he could get back by land, but should be very rich.' I then asked him how many boats he supposed there were in the river at Wassanah? He said, 'A great many, three or four hundred, I should think; but some of them are very small: we saw a great many of these people who had been down the river to see the great water, with slaves and teeth, and came back again: they said the pale people lived in great boats, and had guns as big as their bodies, that made a noise like thunder, and would kill all the people in a hundred negro boats, if they went too near them. We saw in the river and on the bank a great number of fish, with legs and large mouths, and these would run into the water in a minute, if any man went near them; but they told us they would catch children, and sometimes men, when in the boats; (these are no doubt, crocodiles or hippopotamus',) the negroes are very kind, and would always give us barley, corn, or rice, milk or meat, if we were hungry, though we could not speak a language they understood. While we stopped at Wassanah, it rained almost every day. Having traded away all the goods we carried there, Shelbar took three hundred slaves and a great many teeth, dazzling stones, and shells, and gold; with these we set off again, and went the same way back to Tombuctoo, which took us three moons, and we were gone from the time we left it, to the time we returned, eight moons.'

Soon after his arrival, the caravans of Algiers, Tunis, Tripoli, and Fez—all came in together. They remained two moons. Sidi Hamet and his brother joined them with their two camels; and all set out in an east-northerly direction for the Desert. They travelled twenty days through a country full of hills, and of streams 'running south and west;' stopped ten days in a beautiful valley; filled their sacks with coal; and 'mounting up to the Desert, steered away to the north.' In eighteen days they came to the watering place, called *Weydlah;* where there is a pond of black, saline, dead, sulphureous water,—which is 'covered over with a thick green scum'—is never known to be dry, and has not yet been fathomed. The caravan stopped six days in a valley a little westward of this Dead Sea. The camels (4000 in all) were every night made to lie down in a circle, with the goods in the centre; the space betwixt them being occupied by the men, who amounted altogether to about 1500, and were well armed with double-barrelled guns and scimitars.' On the night of the sixth day they were attacked by a large body of Arabs; who, however, after a most desperate conflict of two hours, 'hand to hand, and breast to breast,' were obliged to give up the field. Of Sidi Hamet's party 230 were killed, and about 100 wounded;—of the enemy 700 were lying on the ground, killed and wounded. Those

who could walk---about 100---were taken as slaves; those who could not, were 'put out of pain.' Sidi Hamet and Seid were both wounded; the former with a ball in his thigh; the latter in the breast with a dagger. The caravan lost 300 camels; but found, as a remuneration, about 200 double-barrelled guns and 400 scimitars. They learned from the prisoners, that the assailants were 4000 in number, and had been three moons preparing for the enterprise. Fearing a second visitation, our caravan set out the next day; and, after a travel of twenty-three days in a north-east direction ('out of the usual course') with the loss of fifty men and twenty-one slaves; they stopped and refreshed themselves eleven days at what are called the Eight Wells. They now took a north-west course; and reached Twati in ten days; during the last three of which they waded through deep sand. After resting two days, they 'went down north, into the country of dates; and came to Gujelah, a little strong place belonging to Tunis; where they found plenty of fruit and good water, and meat and milk.' They halted here ten days: the Tripolitan caravan went off east; and the three others travelled twelve days north-easterly; when they came to Tuggertah, close by a mountain, and near the river Tegsha, which is said to flow into the sea not far from Tunis. Tuggertah is very large; has high, thick, and tight walls; a vast number of people; a great many black slaves; and a few white ones.* After parting here with the Tunisian caravan and resting twenty five days, they started off north-westward 'through a very fine country, full of date and fig trees, and cattle, and goats, and camels, and sheep, and asses.' They reached the 'high mountains' in ten days; when the Algerine caravan took its leave. The remaining eighty men and two hundred camels travelled on 'over the great mountain' (the Atlas): and, in two moons, reached Fez, their place of destination. Sidi Hamet and his brother had started with eight richly loaded camels: they had been gone two years; and they 'thanked God' for enabling them to get back with only one camel, and hardly any merchandise at all. They were poor; and had started on another voyage, when they fell in with the company who had taken Captain Riley and his crew. His sufferings had made him humane; and before he left Mr. Willshire's house, he swore by his right hand, that if God spared his life, he would bring back the remainder of the crew. God spare his life!

* On the maps there is a city of *Tuggurt*, placed on a river, near the south border of the Desert. The river and the name correspond with the above description; but the position is more than 10 deg. too far south.

Since the foregoing sheets were put to press, we have received from a gentleman in Georgia, an account of some geological appearances in that state and in South Carolina, which will greatly assist us in forming our opinion as to the origin of the African Zahahrah. We shall copy his own words;—and our readers cannot help seeing, we think, the striking similarity between the sand hills, of which he gives a description, and the African Desert, according to the account given in Captain Riley's Narrative. The sand-hills of Carolina and Georgia

'Consist, for the most part, of hills which rise abruptly from a level country, sometimes to a great height. These eminences are sometimes covered with rocks of the most curious and fanciful forms; in general they resemble very much the dross that is to be seen lying about our common blacksmith shops, except that they are much larger. Often, however, they appear to be the fragments of hollow globes, of a tolerably uniform thickness and regular construction. Some are cylinders of various dimensions, with a hole quite through them, lengthwise: while there are others in the shape of small balls, which when broken prove to be hollow, and contain fine paints of various colours, but chiefly ochre. All these exhibit the most indubitable evidences of having been, at some time or other, exposed to an intense heat. On some of these hills, as well as in places in the level country, there are rocks of an enormous size, which must, from their appearance, have once lain in the bed of some rapid current of water. Nothing else could have worn them into their present curious shape. The hills themselves consist of a hard red earth; sometimes they are quite naked, as to vegetation, and covered on the top with a beautiful fine white sand; at others they have here and there a huge pine tree, that seems as if it had been standing there since the days of Noah. Some of these hills, however, consist of alternate strata of beautifully variegated clay and sand. The clay contains not the smallest particle of sand, and the sand is as entirely free from any mixture of clay; and is, moreover, very often of different colours. This clay, in some instances, makes a very good substitute for chalk; hence these latter are generally, by the inhabitants, denominated *chalk-hills*. Over their top is spread a thin soil, which produces a plant called wild rosemary. They generally terminate, on all sides, in a precipice, sometimes forty feet perpendicular, the edge of which is profusely decorated with a beautiful shrub, called the calico-flower. It puts out in April, and continues in full bloom till midsummer; and during this period its profusion, its exquisite beauty, and the striking contrast which it presents with the barren, dreary, desolate wilderness that surrounds it, render these places truly enchanting. They will, I think, at some future day, furnish the curious with a rich fund of matter for speculation.

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'The water courses which pass through this country, particularly the small rivulets, are indeed beautiful. They are perhaps more so from the wildness and desolation of the country on each side of them. The stream flows over a bed of beautiful white sand, is uncommonly limpid, and is, in the hottest part of summer, cool and agreeable, owing to its being closely overshadowed with juniper, laurel, bay, and other evergreens. In it grows, in great abundance, a beautiful plant, called, silver-leaf, from its peculiar appearance when under the water; besides the common reed, lily, and another curious plant called trumpet-weed, from its resembling that instrument in form. The borders, for about nine or ten feet, are for the most part profusely covered with a plant called the dew-cup, and a variety of shrubbery, chiefly evergreens. Then suddenly commences a naked, sandy, barren soil, incapable of producing any vegetation of consequence.'

ART. VI.—*Intelligence in Science, Literature, and the Arts.*

ENGLAND.—*The Identity of Junius*, with a distinguished living character established. 8vo. price 12s. Taylor and Hessey. London. 1816.—This is really an extraordinary volume. It has occupied patience and perseverance in no common proportion; and life itself has been consumed, together with the oil of the midnight lamp in this inquiry. Neither pains nor ingenuity has been wanting. Every thing that could be compared with another thing, is compared: every date (the most troublesome and perplexing subject, to similar inquirers) is scrutinized; is found to agree to a miracle; every branch of knowledge is examined, and the proficiency of the party is estimated; every connexion of friendship is traced to the utmost; the figure of the writer, his speech, his pronunciation, his phraseology, are all brought to bear their witness in this important cause. The hand writing is not overlooked; the reasons for keeping *that* a secret, are suggested. The causes of Junius's evident favouritism, his refraining from abusing lord Holland, while he threatens his son Charles Fox, his praise of lord Chatham, with a thousand other particulars, are all stated, canvassed, cleared up, decided on, and satisfactorily dismissed and concluded.

If such a work had come down to us from the days of antiquity, what could we think of it. Having nothing to guide our opinion into a better channel, it must be taken as demonstrative; and whether it concerned Pericles or Plato, Demosthenes or Cicero, it would be appealed to with triumphant satisfaction, by whoever undertook to do those illustrious characters justice. And yet, after all, it might mislead the reader; the identity supposed, might be only suppositious; the proofs might be all fallacious, and a single *yes*, or *no*, from another quarter might invalidate, (or confirm) the whole.

We may safely say, that if the volume be not demonstrative it deserves to be so; and it possibly may approach nearer to it than it may be convenient to allow, especially as the writer seems tacitly to allow that Junius was not a single writer. There were, in short, several persons to whom the secret of the marked *C* was intrusted; and towards the close of the correspondence there is an evident change of style. Sir Philip Francis might address Woodfall under the private mark of Junius; but, who was the Junius that wrote the letter to the king, the duke of Grafton, and the early compositions? not sir Philip Francis.

The question might be further advanced if an opportunity were afforded of comparing the *then* hand writing of sir Philip, with that of Junius. We are mistaken if that of Junius would not be found older by twenty years, than that of sir Philip. The first Junius had been in the world—the busy world—many years. He was a chosen tool, by men who themselves were politicians of no small eminence, and who in other ways, and in more ostensible situations, made the most of all his—and their own arguments—in their own favour.

To the Shelburne party, and to the Shelburne house we have always attributed Junius; and though all memory of a manœuvre so private may be lost in that family, and it may not be recollected now, the scheme might nevertheless originate and be carried on, in that connexion. We do not perceive, that the writer of this volume has shown any great intimacy between sir P. Francis, or his father, and lord Shelburne. Such an incident, fairly proved, would in our estimation weigh equal to volumes of inferential evidence. Nevertheless inferential evidence is not to be despised; as this writer makes clearly manifest in every page.

The following paragraph contains one of the negative arguments adduced by the writer: together with his admission that Junius was not a single person.

If we could suppose that the interests of Sir P. FRANCIS were not identified with those of JUNIUS, what motive can be found for the sudden and lasting silence of the latter? Admitting that he was a friend, angry at his *protege's* dismissal from the War-office, is that a reason why he should for ever give up the 'cause of the *public?*' Or if he was that stanch friend, that second self, is not sir PHILIP aware of this kindness, and could he not disclose the name of his benefactor? But perhaps such a disclosure would be a breach of honour! He admits then that he was a party in the affair—that the letters were written with his privity—in short, that he knows who JUNIUS is, or was, though he cannot divulge the secret—*ab animo tuo quicquid agitur, id agitur a te.*—Such an admission is all I ask, and with this additional voucher for the truth of my conjecture, I shall proceed in my investigation. It is not for me to deny that more than one person might have contributed to sustain the character of JUNIUS: all I have in view is the proof that at least sir PHILIP FRANCIS was a party.

How far this may operate to abate the expectations of the sanguine, and the dependence of the forward, we must leave to themselves. The letters which attacked the character of lord Barrington, then secretary at war, and on that of Mr. Chamier his private secretary, certainly have much the air of being such as might be expected from the then disappointed and *dismissed* sir P. F. but others might know from clerks in office quite as much as these letters contain, for they assume rather a greater share of knowledge than they display. They are written with bitterness, with a personal animosity, unworthy a Junius; and are not exactly a *fac simile* of what it might be supposed he would have said on the occasion.

As much of the author's reasoning depends on the identity of phraseology between his two characters, and as the subject is really curious, we shall insert a specimen of his talents on this branch of evidence.

JUNIUS.—"As it is, whenever he changes his servants, he is sure to have the people in that instance *of his side.*"

————"I am persuaded he would have the reasonable part of the Americans *of his side.*"

————"Here my lord you have fortune *of your side.*"

———"One would think that all the fools were *of the other side* of the question."

———"*We have the laws of our side*, and want nothing but an intrepid leader."

———"It is true he professes doctrines which would be treason in America, but in England, at least, *he has the laws of his side.*"

FRANCIS.—"But he who knows that *he has the law of his side*, will never think of appealing to necessity for a defence of the legality of his measures."

———"My reply to the preceding minute is intended for my own justification, and to satisfy the court of directors, that if I persist in a conduct opposed to the decided sense of the majority, it is not from obstinacy or passion, but that I have some reason *of my side*, and that I am not so ill advised as to endeavour to support any opinion by appealing to evidence that proves directly against me."

———"I confess he supported his opinion with so many plausible arguments, that I myself began to think he might have reason *of his side.*"

———"Let the questions be put into writing, and read or delivered to her publicly, and then I think there can be no ground for a suspicion of undue influence *of either side.*"

———"Considerations of that kind are irregular; and, as I think, not fit to be insisted on *of either side.*"

This phrase occurs, it must be owned, sufficiently often, but, those who are in the habit of rapid composition, or of public speaking, without previous deliberation will know what trifling stress it will bear. Even friends at the bar fall into one another's mode of diction; and very frequently, a pupil is for a long while a mere repetition of his master.

Not to leave any argument that seems to afford assistance untried, the personal appearance of Junius is adverted to; although it is every way probable, that Junius himself never visited Woodfall's office, at a time when a Junius was waited for, and consequently all eyes would be open to watch, and every passenger would be suspected. On one occasion a Junius was thrown into the passage of Woodfall's office late at night, by a tall gentleman: now this shall be converted into an argument to prove that Junius was a tall man; and as sir Philip Francis is tall, the evidence is conclusive!

Even in externals the resemblance between sir PHILIP FRANCIS and JUNIUS is remarkably perfect. The *stature* of the latter may be ascertained from a perusal of his letters. It is the custom only of tall men to attach very commonly the epithet "*little*" to those whom they are inclined to treat with disrespectful freedom. We seldom find one of a middle size guilty of this; it too nearly concerns himself: if he employs the term, it either loses its force, or recoils upon him with an unpleasant effect. The slightest observation will confirm the above remark. If then in JUNIUS we see the word *little* assigned to many different individuals, we may conclude that the person of the writer was of an opposite description. Should it appear that this is a habit in which he *frequently* indulges; and that some individuals, not much, if any thing, below the common standard are thus distinguished; we may judge by the same rule, that the denominator was himself a taller man than ordinary.

To this class JUNIUS most certainly belongs. His liberal sprinkling of the *inglorious* attribute among those who had the honour of his notice, may be collected from the following examples.

"I dont so much as question Mr. Hervey's being able to give good advice, as that *other little man's* being either willing or able to follow it;" alluding to lord Barrington, who is again styled "*my little lord.*"

Mr. Chamier is scarcely ever mentioned but as *little Shammy*—a tight active *little fellow*—a *little* gambling broker—*little* Waddlewell—*little* 3 per cents reduced—a wonderful *Girgishite*—a *little* whiffling broker, &c. &c.

Mr. Ellis is a *little* piece of machinery—*little* Ellis—*little mannikin* Ellis—WELBORE ELLIS WHAT SAY YOU?—Speak out *Grildrig*."

This presumptive proof that JUNIUS was himself a tall man, receives strength from the following description of his person, extracted from a note to the last edition of the Letters.

"Mr Jackson, the present respectable proprietor of the Ipswich Journal, was at this time in the employment of the late Mr. Woodfall, and he observed to the editor, in September last, *that he once saw a* TALL *gentleman dressed in a light coat, with bag and sword*, throw into the office door opening in Ivy Lane, a letter of JUNIUS's, which he picked up; and immediately followed the bearer of it into St. Paul's Church-yard, where he got into a hackney coach and drove off." This possibly might *not* be the author of the Letters; but the anecdote deserves attention, since the figure of the gentleman agrees with that idea of his person which JUNIUS had led us to conceive.

'Some persons are inclined to dwell on these particulars more than on moral evidence—*formam aliquam figuramque quærebant.* I confess that I am inclined to place dependence upon Mr. Jackson's testimony, and should have felt dissatisfied in no slight degree, had it not been perfectly reconcileable with my opinion of the author. Sir PHILIP FRANCIS *resembles, in person*, the gentleman seen by Mr. Jackson. For the satisfaction of those who never saw sir PHILIP, his portrait is prefixed to this volume, in confirmation of our statement. The original picture, painted by Lonsdale, was copied by the engraver of the present, in the plate to the Monthly Mirror for May, 1810.

I know not in what *costume* Sir PHILIP usually appeared at the time the Letters were written, but from the fashion of the age, it could not be essentially different from that which Mr. Jackson describes.—The colour must, of course, be accidental.'

These, with the other circumstances enlarged on by the writer, are brought into a laboured and very attentively composed volume. They might puzzle a jury of very honest Englishmen: but the judge would set them to rights. They might all be dissipated in a moment by a clear denial in a few words, but that kind of denial which sir Philip did give, this writer insists is in perfect character with Junius, equally jesuitical and sarcastic, proving nothing. It is to this effect.

"SIR,—The great civility of your letter induces me to answer it, which, with reference merely to its subject matter, I should have declined. Whether you will assist in giving currency to a silly, malignant falsehood, is a question for your own discretion. To me it is a matter of perfect indifference.

"I am, Sir, yours, &c.
"P. FRANCIS."

To the Editor of the Monthly Magazine.

Here we close our account of this volume: it is ingenious, laborious, persevering. If the author be a lawyer, his pleading does him credit: he has made the most of his cause; and if it fail in any point, it is not for want of industry in him who has pleaded it.—*Lit. Pan. No.* 28.

Mr. Tabart, of the Juvenile Library, Piccadilly, announces a monthly miscellany for the use of schools, and for the general purposes of education, under the title of "Tabart's School Magazine, or Journal of edu-

cation." It is intended to be composed chiefly of modern materials, for the purpose of connecting, as much as possible, the business of the school-room with that of the active world, for which education ought to prepare its subjects. The first number will appear on the first of March.

The Rev. Dr. Chalmers, of Glasgow, is printing a volume of Discourses, in which he combats, at some length, the argument derived from astronomy, against the truth of the Christian Revelation: and, in the prosecution of his reasoning, he attempts to elucidate the harmony that subsists between the doctrines of Scripture and the discoveries of modern science.

In the course of the month may be expected, an octavo volume, comprising, a Tour through Belgium along the Rhine, and through the North of France; in which an account is given of the civil and ecclesiastical polity of the kingdom of the Netherlands, and of the system of education; with remarks on the fine arts, commerce, and manufactures; by James Mitchel, M. A.

That accurate meteorologist, Mr. Luke Howard, has circulated some observations on the effect of the late Solar Eclipse on the temperature of the day on which it occurred. It appears that the temperature on the day was falling, as is very commonly the case, before sun-rise; presently after which, it began to rise. This effect continued until a considerable portion of the sun's rays became intercepted, when it fell again, to near the middle of the eclipse; and, in proportion as the latter went off, resumed its former movement, rose steadily, and attained its maximum at nearly the same degree as the day before, though later in the afternoon.

Mr. William Daniell is commencing the third volume of his picturesque Voyage round Great Britain, which is published in monthly parts.

Biblical Criticism on the Books of the Old Testament, and Translations of Sacred Songs, with notes, critical and explanatory, by Samuel Horsley, LL.D. F.R.S. F.A.S. late Lord Bishop of St. Asaph, is in considerable forwardness.

In the month of January may be expected, in octavo, the first volume of the Annual Obituary, containing memoirs of those celebrated men who have died within the year (1816); neglected biography, with biographical notices and anecdotes, and original letters; an analysis of recent biographical works; and an alphabetical list of persons who have died within the British dominions.

Mr. Booth, treasurer to the Childwall Provident Institution, has in the press, and will be published in a few weeks, a System of Book-keeping, adapted solely for the use of Provident Institutions, or Saving Banks, whether their capitals be invested in the public funds or otherwise; together with tables, for reducing money into stock, (five per cent.) and stock into money; by which their accounts may be kept in a shorter and more expeditious manner than in any of the modes that have been consulted, in which they are kept by the managers of such institutions.

ERRATA.

Page 268, line 10, for *Joseph* Trumbull read *John* Trumbull.
270, 41, for *western* read *northern*.
271, 37, after *which* insert *as*.
272, 20, for *works* read *work*.
276, 12, dele *each*
277, 44, for *an* read *on*.
280, 13, for *motions* read *notions*.

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FAC SIMILE OF THE HAND WRITING OF Dr. FRANKLIN.

Philad.a July 5. 1775

Mr. Strahan,